National Airspace System

System Requirements Specifications

NAS SR-1000

Revision B
Functional View

Department of Transportation
Federal Aviation Administration

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1. Introduction

The Federal Aviation Administration (FAA) is responsible for providing safe and efficient air traffic control services to the flying public. Over many years, the National Airspace System (NAS) has evolved to help the FAA provide these services. This document, the NAS SR-1000 NAS System Requirements Specification (Revision B), is a compilation of the high-level requirements for today's operating NAS.

1.1 Purpose

As the NAS's top-level requirements document, the NAS-SR-1000 states at a high level the unallocated requirements that the NAS must perform. It is the repository of requirements that the FAA uses to derive all NAS program and project requirements, providing the baseline requirements for current NAS systems. The NAS-SR-1000, primarily an internal FAA management tool, supports NAS design, enterprise architecture engineering, and acquisition activities for new and upgraded systems as well as manages and controls change to the NAS.

The FAA has established specific goals in its FAA Flight Plan to modernize the NAS. This NAS-SR-1000 requirements document provides the basis for ongoing activities in the FAA, such as the Operational Evolution Partnership, the Next Generation Air Transportation System (NextGen), and the Joint Planning and Development Office. These activities are working to deliver new Air Traffic Control (ATC) systems and capabilities through 2025.

1.2 Background

NAS-SR-1000 was written in 1985 as a compilation of requirements that describe NAS operational capabilities as they were projected to be in 2000. The document was revised numerous times through 1999. In 2005, NAS-SR-1000 Revision A was published to update terms and concepts and realign the requirements with the NAS Architecture Air Traffic Services Group services and capabilities. The requirements were also rewritten to conform to the characteristics of "good requirements" as defined in the NAS System Engineering Manual (SEM). The SEM defines such requirements as being "necessary," "concise," "solution non-specific," "attainable," "complete," "consistent," "traceable," "unambiguous," "verifiable," and "allocable." Well-written, unambiguous requirements at the NAS level provide a sound foundation to which all system-level requirements can be traced.

Revision B of NAS-SR-1000 continues to define and refine NAS requirements so that they meet the characteristics of the SEM-defined "good requirements." In the past, requirements in the NAS-SR-1000 have been expressed at all levels of design: from the highest level of need to needs at the system and design level. System and lower level requirements influence system design selection and in many cases may negate the correct design. Revision B provides a functional view of the NAS-SR-1000 requirements and includes only the high-level requirements. The NAS functions in Revision B link to the services and capabilities of the NAS Architecture. Revision B also updates the Reliability, Maintainability, and Availability (RMA) requirements.

1.3 Scope

The NAS Architecture is a comprehensive, multiyear plan for improving the NAS and ultimately reflecting the NextGen. It describes the services and capabilities that the NAS requires to provide safe and efficient ATC services to the public. Overall, the NAS Architecture lays out the proposed execution of several key modernization plans: the FAA Flight Plan; the NAS Operational Evolution Partnership; the NAS Capital Investment Plan; and the National Aviation Research Plan.

The Architecture defines, nine Air Traffic Services. They are: ATC-Advisory, ATC-Separation Assurance, Airspace Management, Emergency and Alerting, Flight Planning, Infrastructure– Information Management, Navigation, Traffic Management (TM)– Strategic Flow, and TM– Synchronization. Each service consists of capabilities, which are related activities that enable or support delivery of the service.

NAS-SR-1000 Revision B defines six high-level functions that will provide the services and capabilities described in the NAS Architecture. The six functions are: Plan Flights, Monitor Flights, Control Traffic, Support Flight Operations, Monitor NAS Operations, and Plan NAS Usage. These high-level functions decompose into lower level functions that follow the logic of ATC and the services that the NAS provides. The functions reflect the operational services, facilities, navigational aids, and NAS maintenance, as well as development and definition of the airspace. Additional requirements that support or enable the high-level NAS functions include Infrastructure, Security, Performance, Frequency Spectrum, and RMA.

1.4 Document Structure

Section 2 describes the high-level NAS functions and defines lower level functions, which collectively comprise the higher function. The section also maps high-level functions to the Air Traffic Services in the NAS Architecture.

Section 3 contains requirements for the lower level functions that comprise the high-level NAS functions. In sections 3 and 4 each requirement is preceded by a “SR-1000-XXXXX” number in front of it, where XXXXX is a unique 5 digit identifier.

Section 4 describes requirements that enable and support the high-level NAS functions. The requirements include:

- **Infrastructure** — Requirements for; Communication (voice and data communication); Test and Evaluation to verify that NAS systems meet operational and functional requirements; Training to ensure NAS systems are properly operated; and Maintenance to ensure that NAS systems are properly maintained.
- **Security** — Physical and information security requirements to protect the NAS from unauthorized access and sabotage.
- **Performance** — NAS-level performance standards.

- **Spectrum** — NAS operating frequency spectrum requirements.
- **Reliability, Maintainability, and Availability** — Requirements to maintain consistency of NAS services.

Section 5 is a glossary, and Section 6 lists acronyms.

2 Functional Descriptions

2.1 Functional Group — National Airspace System Functions

2.1.1 Plan Flights

The Plan Flights function (1) evaluates conditions in preparing to conduct flight and (2) manages NAS flight plans. Flight Planning for visual and instrument flight supports safe and efficient flight. This planning requires accurate and timely weather information, current aeronautical information, and knowledge of potential or actual airspace or route saturation. In addition, the NAS must be able to receive flight information from various sources and distribute it to the appropriate user and specialist.

2.1.1.1 Evaluate Flight Conditions

To prepare and conduct preflight and in-flight briefings, specialists evaluate flight conditions by assessing airspace, facility, route, and flow management status. They perform this airspace assessment to determine the status of special use airspace, disseminate weather information to users, notify users of the schedules for airspace usage, and acquire requests for airspace reservations. Preflight preparations also include retrieving and disseminating user-requested aeronautical data along routes according to flight path, location, and time.

Specialists disseminate route information—including route of flight alternatives, NAS-preferred routes and route-oriented weather from reporting stations along the requested route, and departure time alternatives—to resolve possible airspace conflicts. They coordinate with traffic management coordinators regarding current delay advisories in effect along the users' proposed flight path, and regarding requested altitude reservations.

2.1.1.2 Manage Flight Plans

The NAS accepts proposed flight plans from users and specialists in NAS and International Civil Aviation Organization (ICAO) formats. Validated flight plans and amendments are acquired from NAS facilities and non-NAS ATC authorities. The NAS notifies users and specialists when it has accepted a flight plan or amendment. Additionally, the NAS accepts and processes users' requests to cancel flight plans while also accepting corrections to errors in a proposed flight plan and amendments without the user needing to re-input the entire flight plan.

The NAS validates flight plans and flight plan amendments from users and specialists and detects errors in flight plans. Flight plans are compared against known NAS constraints and users and specialists are notified of errors. Approved flight plans conform to metering, flow and airspace restrictions, and avoid severe weather. The NAS disseminates active flight information, flight plans, and departure requests to users, specialists, and appropriate ATC facilities along the route of flight. The NAS activates flight plans and disseminates departure requests and flight plan clearances to appropriate specialists and users.

2.1.2 Monitor Flights

Specialists continuously monitor the progress of participating flights through surveillance in terminal and en route environments. They also monitor flights using visual observation in the airport traffic area as well as aircraft positions reported by pilots. Specialists use surveillance information to determine the speed, altitude, and direction of an aircraft, which, in turn, enables them to monitor progress, correlate flight plans with surveillance, and report positions to determine trajectory. Specialists monitor emergency frequencies (on both ultra high and very high frequency spectrums) for aircraft in distress. They maintain communication with law enforcement agencies and air and sea rescue units to assist with any emergencies.

2.1.2.1 Collect Position Information

Specialists collect position reports from aircraft in en route and terminal airspace to establish aircraft positions. They also use surveillance and transponder information to determine aircraft position in terminal and en route airspaces. Specialists can also determine aircraft positions using visual observation of ground and tower airspace and remote area pilot position reports. Specialists can detect the position of an aircraft in selected volumes of en route and terminal airspace independent of aircraft equipage.

2.1.2.2 Determine Aircraft Trajectory

Flight trajectories are determined for each controlled aircraft in US delegated airspace. Velocity, look-ahead time, correlated flight plan with surveillance information and reported positions will determine an aircraft trajectory. Aircraft trajectories are generated across physical ATC facility boundaries for inter-facility flights.

2.1.2.3 Monitor Aircraft Status

Aircraft are monitored and progress updated in selected low altitude environments receiving flight following services. Surveillance and aircraft trajectory information is used to formulate the aircraft status as it is compared to the filed flight plan. Specialists monitor emergency information, for transmissions from Emergency Locator Transmitters (ELT) and retrieve essential information on overdue aircraft; and they accept emergency transmissions from any user declaring an emergency.

2.1.2.4 Disseminate Aircraft Status

When a controlled aircraft's track position is outside of its clearance-based trajectory this information is disseminated to specialists. The position of aircraft operating within an ADIZ is disseminated to the military officials, as is position information of aircraft of special interest disseminated to law enforcement agencies. Amendments on active flight plans are accepted immediately and disseminated to Traffic Management Coordinators and ATCSCC specialists. Emergency information received from an aircraft is disseminated to agencies involved in search and rescue activities. Essential emergency information is disseminated to ensure timely emergency assistance.

2.1.3 Control Traffic

This function describes direct coordination between air traffic controllers and pilots, enabling controllers to separate and synchronize air traffic. The controller separates and coordinates aircraft between ATC domains in a manner consistent with airspace configurations and system constraints. The Control Traffic function has four major functional areas: Manage Separation Information, Synchronize Traffic, Control Aircraft, and Coordinate Control of Aircraft. The controller analyzes the separation information and disseminates directives to ensure separation and to implement synchronization plans.

2.1.3.1 Manage Separation Information

This function addresses separation between aircraft, between aircraft and the terrain, and between aircraft and obstacles. It also addresses requirements as applied to airspace and air traffic domains and sector boundaries. Separation on final approach and between parallel runways is also addressed consistent with airspace configuration and system constraints. The NAS evaluates separation information to ensure safe operation and to generate and disseminate resolution advisories for loss of separation. Separation assurance includes aircraft operating on the surface and in parallel runway environments.

2.1.3.2 Synchronize Traffic

The controller synchronizes traffic flow within his or her control. The controller analyzes arrival and departure phases of flight and issues clearances to enable synchronization schemes for both Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) traffic. The controller disseminates traffic synchronization plans to the appropriate specialist.

2.1.3.3 Control Aircraft

Controllers accept user communications, including Pilot Reports (PIREPS) and departure time requests, and generate directives in response to specific requests. Controllers disseminate directives to users—such as taxi and flight plan clearances and transition data from VFR to IFR flight—as well as safety-critical information, including hazardous weather avoidance data and changes in NAS status.

2.1.3.4 Coordinate Control of Aircraft

Controllers communicate with aircraft and vehicles on the airport surface. As aircraft progress through the NAS, controllers transfer control responsibilities between and within ATC domains, and between military control facilities; they also close flight plans as appropriate.

2.1.4 Support Flight Operations

The NAS utilizes weather information, and generates navigational guidance information. Weather information is used to manage the flow and separation of air traffic as well as to provide weather information to pilots. NAS navigational guidance information enables aircraft to navigate through NAS airspace in the departure, en route, and arrival route domains, as well as provides guidance to aircraft on approach to landing.

2.1.4.1 Manage Weather Information

The NAS acquires weather information from the National Weather Service, NAS weather systems, and pilot weather reports. Both pilots and the NAS use weather information to promote safe and efficient flight operations through NAS airspace. Pilots use the information to plan flights and monitor in-flight weather changes; the NAS uses the information to implement flow control plans and provide in-flight weather advisories.

2.1.4.2 Operate Navigational Aids

The NAS provides electronic and visual capabilities that support navigation in the en route and terminal flight environments. These include ground-based systems that transmit azimuth and distance navigation information that enables aircraft to fly their flight routes and complete landings at airports per published procedures. Space-based systems also enable navigation and landing procedures by providing accurate position determination information for en route and terminal approach and landings. Finally, ground-based approach lighting and descent guidance systems located on the airport provide visual support for landing approaches.

2.1.5 Monitor NAS Operations

The NAS continuously monitors the balance between airspace capacity and air traffic demand. If demand exceeds capacity, the monitoring function signals the NAS to determine a new traffic flow plan to meet user needs. The NAS also monitors and maintains its infrastructure and must constantly update the status of all its assets and systems to provide safe and effective services. The NAS uses appropriate preventive and corrective maintenance procedures to ensure the integrity of operational systems.

2.1.5.1 Monitor NAS Flight Operations

This function generates flight operation statistics, particularly monitoring information pertinent to calculating demand and capacity. Local runway acceptance rates are used to determine capacity, and traffic count summaries and traffic saturation are used to determine demand. The function also generates projections of future flight operations based on future weather predictions, expected demand levels, and runway surface conditions.

2.1.5.2 Maintain NAS Infrastructure

This function monitors and maintains NAS resources, including monitoring aeronautical information, airport status, and system status. Information pertaining to these resources is disseminated as needed. The function covers system maintenance, which is performed at scheduled intervals and when a system has failed. Storage and analysis of information regarding all maintenance performed to reveal trends to prevent or predict future failures is also performed by this function. If a system fails, the affected functionality is restored by using backup equipment until the primary system is restored.

2.1.6 Plan NAS Usage

The NAS designs airspace, plans the flow of air traffic, and assesses performance of the airspace and traffic flow. The NAS can dynamically manipulate traffic flow to meet its current needs, and it analyzes the effectiveness of all traffic flow initiatives to help determine possible improvements.

2.1.6.1 Plan Traffic Flow

This function assesses traffic flow constraints, decides on traffic flow initiatives, and reports those initiatives. The NAS evaluates traffic flow information to determine any imbalances between the demand on the NAS and its capacity. If imbalances occur, the NAS generates and disseminates traffic flow guidance that corrects the problem and optimizes NAS traffic flow throughput. To

forestall anticipated problems, the NAS, accordingly, generates traffic flow plans in advance of a large upcoming weather phenomenon or special event.

2.1.6.2 Assess Traffic Flow Performance

Traffic flow restrictions, capacity deficiencies, and equipment performance measurements are evaluated for effectiveness and trends. The evaluations are used to generate performance reports.

2.1.6.3 Manage Airspace Configurations

Special use airspace, geographic information, airspace reservations, and altitude reservations are collected to determine the constraints on the airspace design and implementation. The NAS defines airspace boundaries and arrival and departure procedures for terminal airspace. Minimum safe altitudes are determined over all areas of U.S.-delegated airspace. Then, the NAS disseminates information on the structure of the airspace, navigational reference points, terrain and obstacles, and airports to specialists and NAS users.

2.2 Function to Service Mapping

Table 1 maps the requirements of each function to the appropriate NAS services. This helps to support the traceability of requirements between the Service and Functional views of the NAS-SR-1000 Revision B.

Paragraph	Function \ Service	Flight Planning	ATC- Separation Assurance	ATC-Advisory	TM- Synchronization	TM- Strategic Flow	Emergency Services	Navigation	Airspace Management	Infrastructure and Information Management
2.1.1.1	**Evaluate Flight Conditions**	x		x						
2.1.1.2	**Manage Flight Plans**	x								
2.1.2.1	**Collect Position Information**	x	x	x	x		x	x		
2.1.2.2	**Determine Aircraft Trajectory**		x		x					
2.1.2.3	**Monitor Aircraft Status**	x					x	x		
2.1.2.4	**Disseminate Aircraft Status**	x	x				x			
2.1.3.1	**Manage Separation Information**		x							
2.1.3.2	**Synchronize Traffic**		x	x	x	x				
2.1.3.3	**Control Aircraft**		x							
2.1.3.4	**Coordinate Control of Aircraft**		x							x
2.1.4.1	**Manage Weather Information**	x		x		x				
2.1.4.2	**Operate NAVAIDS**							x		
2.1.5.1	**Monitor NAS Flight Operations**			x		x				
2.1.5.2	**Maintain NAS Infrastructure**		x	x			x			x
2.1.6.1	**Plan Traffic Flow**					x				x
2.1.6.2	**Assess Traffic Flow Performance**					x				
2.1.6.3	**Manage Airspace Configuration**	x	x				x	x	x	x

Table 1. NAS Function to NAS Service Mapping

3 Functional Requirements

3.1 Plan Flights

3.1.1 Evaluate Flight Conditions

3.1.1.1 Assess Airspace Status

SR-1000-40010 The NAS shall accept airspace information requests.
SR-1000-40020 The NAS shall disseminate requested airspace status information.
- SR-1000-08760 The NAS shall disseminate the status of special use airspace to users.
- SR-1000-08770 The NAS shall disseminate the status of special use airspace to specialists.
- SR-1000-01430 The NAS shall notify users of the schedules for airspace usage.
- SR-1000-01440 The NAS shall notify specialists of the schedules for airspace usage.

SR-1000-27150 The NAS shall disseminate weather information to users to support flight planning.

3.1.1.2 Assess NAS Status

SR-1000-40030 The NAS shall accept aeronautical information requests.
SR-1000-40040 The NAS shall retrieve aeronautical information.
SR-1000-40050 The NAS shall disseminate requested aeronautical information.
- SR-1000-27160 The NAS shall disseminate aeronautical information to users to support flight planning.

3.1.1.3 Assess Route Status

SR-1000-40060 The NAS shall accept route information requests.
- SR-1000-29030 The NAS shall accept route proposals.
- SR-1000-40070 The NAS shall accept route proposals from the military.

SR-1000-40080 The NAS shall validate route proposals.
- SR-1000-16560 The NAS shall validate route proposals based on military requirements.
- SR-1000-15940 The NAS shall evaluate the impact of requests for military air operations.
- SR-1000-15950 The NAS shall coordinate requests for military air operations.
- SR-1000-40090 The NAS shall disseminate alternatives to military mission planners to resolve possible airspace conflicts.

SR-1000-40100 The NAS shall store route proposals.
- SR-1000-40110 The NAS shall store NAS preferred routes.
- SR-1000-16550 The NAS shall store route proposals based on military requirements.

SR-1000-40120 The NAS shall disseminate available route information.
- SR-1000-40130 The NAS shall disseminate requested route information.
- SR-1000-00480 The NAS shall disseminate NAS preferred routes.

3.1.1.4 Assess Flow Management Status

SR-1000-40140 The NAS shall disseminate delay information.

SR-1000-07490 The NAS shall disseminate current delay advisories in effect along the users proposed flight path.

3.1.2 Manage Flight Plans

3.1.2.1 Produce Flight Plans

3.1.2.1.1 Accept Flight Plans

SR-1000-00140 The NAS shall acquire flight plan information.
SR-1000-40150 The NAS shall accept proposed flight plan information.
SR-1000-40160 The NAS shall format proposed flight plan information.
SR-1000-27210 The NAS shall accept flight plans.
SR-1000-00380 The NAS shall accept flight plans in advance of proposed departure time.
SR-1000-00540 The NAS shall accept flight plans from users.
SR-1000-00550 The NAS shall accept flight plans from specialists.
SR-1000-00700 The NAS shall notify the originator when a flight plan has been accepted.
SR-1000-40170 The NAS shall accept flight plan information from non-NAS air traffic control authorities.
SR-1000-00330 The NAS shall convert NAS flight plans into ICAO format.

3.1.2.1.2 Accept Amendments

SR-1000-27610 The NAS shall accept flight plan amendments.
SR-1000-00200 The NAS shall accept amendments to proposed flight plans.
SR-1000-00690 The NAS shall notify users when an amendment has been accepted
SR-1000-00710 The NAS shall notify specialists when an amendment has been accepted
SR-1000-00730 The NAS shall accept amendments to active flight plans from specialists.

3.1.2.1.3 Accept Corrections

SR-1000-40180 The NAS shall accept corrections to proposed flight plans.

3.1.2.1.4 Accept Military Flight Plans

SR-1000-40190 The NAS shall accept flight plans from the military.
SR-1000-16350 The NAS shall acquire classified flight plans from the military.

3.1.2.1.5 Accept ICAO Flight Plans

SR-1000-00100 The NAS shall acquire ICAO flight plan information.
SR-1000-00290 The NAS shall accept flight plans in ICAO format.
SR-1000-00320 The NAS shall convert ICAO flight plans into NAS format.

3.1.2.1.6 Cancel Flight Plans

SR-1000-40200 The NAS shall accept requests to cancel flight plans.
SR-1000-27720 The NAS shall cancel flight plans.

3.1.2.2 Validate Flight Plans

SR-1000-27400 The NAS shall validate flight plans.
- SR-1000-00610 The NAS shall detect errors in flight plans.
- SR-1000-27710 The NAS shall notify the originator of any problems with flight plan amendments.
- SR-1000-00270 The NAS shall validate flight plans in NAS format.
- SR-1000-00300 The NAS shall validate flight plans in ICAO format.

SR-1000-27100 The NAS shall compare proposed flight plans against known NAS constraints.
SR-1000-27680 The NAS shall validate flight plan amendments.
- SR-1000-23070 The NAS shall validate user amendments to proposed flight plans.
- SR-1000-23110 The NAS shall validate specialist amendments to proposed flight plans.

SR-1000-40220 The NAS shall store validated flight plans.
- SR-1000-01390 The NAS shall store classified military flight plans.
- SR-1000-00400 The NAS shall store recurring flight plans.
- SR-1000-00860 The NAS shall store pre-filed flight plans.
- SR-1000-12880 The NAS shall retrieve flight plan data upon receipt of specialists' request.
- SR-1000-00310 The NAS shall store flight plans in ICAO format.

SR-1000-27520 The NAS shall maintain flight-planning data archives.

3.1.2.3 Disseminate Flight Plans

SR-1000-40230 The NAS shall disseminate flight plans.
- SR-1000-00010 The NAS shall disseminate flight plan information to users.
  - SR-1000-02900 The NAS shall disseminate flight plan clearances to users.
  - SR-1000-00120 The NAS shall disseminate ICAO flight plan information to users.
  - SR-1000-00160 The NAS shall disseminate NAS flight plan information to users.
  - SR-1000-17700 The NAS shall disseminate flight plan information to the military.
  - SR-1000-17710 The NAS shall disseminate flight plan information to law enforcement authorities.
  - SR-1000-40015 The NAS shall disseminate classified flight plans to authorized users.

- SR-1000-40240 The NAS shall accept requests from specialists to retrieve flight plans.
- SR-1000-40250 The NAS shall disseminate flight plans to specialists.
  - SR-1000-00020 The NAS shall disseminate flight information to specialists.
  - SR-1000-00080 The NAS shall disseminate flight information to traffic management specialists.
  - SR-1000-00130 The NAS shall disseminate ICAO flight plan information to specialists.

SR-1000-40760 The NAS shall disseminate classified flight plans to authorized specialists.

SR-1000-00770 The NAS shall notify the specialist of any amendments to flight plans.
SR-1000-29060 The NAS shall disseminate flight plans to ATC facilities along the route of flight.
SR-1000-40260 The NAS shall disseminate flight plan information to non-NAS air traffic control authorities.
SR-1000-40270 The NAS shall activate flight plans.
SR-1000-40280 The NAS shall accept requests to activate flight plans from users.
SR-1000-40290 The NAS shall accept requests to activate flight plans from specialists.
SR-1000-27130 The NAS shall conduct preflight briefings.
SR-1000-27120 The NAS shall conduct in-flight briefings.

3.2 Monitor Flights

3.2.1 Collect Position Information

3.2.1.1 Collect Independent Surveillance Information

SR-1000-40300 The NAS shall detect aircraft on controlled aerodrome surface movement areas.
SR-1000-40310 The NAS shall detect each controlled aircraft inbound towards US domestic and offshore airspace.
SR-1000-02070 The NAS shall detect each controlled aircraft in US delegated airspace.
SR-1000-19540 The NAS shall detect aircraft throughout an Air Defense Identification Zone (ADIZ).
SR-1000-02480 The NAS shall detect aircraft in qualifying aerodromes, independent of aircraft equipage.
SR-1000-02510 The NAS shall detect the position of aircraft in terminal areas independent of aircraft equipage.
SR-1000-15590 The NAS shall detect the position of aircraft in selected volumes of en route airspace, independent of aircraft equipage.
SR-1000-17820 The NAS shall detect aircraft of special interest operating in NAS airspace.

3.2.1.2 Collect Dependent Surveillance Information

SR-1000-40320 The NAS shall acquire dependent surveillance flight information
SR-1000-17280 The NAS shall acquire altitude information of any aircraft operating within an ADIZ.
SR-1000-24610 The NAS shall acquire position reports from properly equipped aircraft in en route airspace.
SR-1000-24650 The NAS shall acquire position reports from properly equipped aircraft in terminal areas.
SR-1000-21540 The NAS shall provide surveillance data to backup facilities.

SR-1000-03270 The NAS shall acquire position reports from aircraft.

SR-1000-24630 The NAS shall acquire position reports from properly equipped aircraft in terminal areas.

SR-1000-24600 The NAS shall acquire position reports from properly equipped aircraft in selected volumes of en route airspace.

3.2.1.3 Determine Aircraft Position

3.2.1.3.1 Identify Aircraft

SR-1000-17690 The NAS shall identify aircraft within an ADIZ on a continuous basis.
SR-1000-04560 The NAS shall identify aircraft on airport surface.
SR-1000-40340 The NAS shall identify aircraft in the en route environment.
SR-1000-40350 The NAS shall identify aircraft in the terminal environment.

3.2.1.3.2 Process Aircraft Position Data

SR-1000-01610 The NAS shall determine the current altitude for each participating aircraft (in controlled airspace).
SR-1000-04580 The NAS shall determine the position of aircraft on airport movement areas.
SR-1000-04590 The NAS shall determine the position of vehicles on airport movement areas.
SR-1000-25020 The NAS shall process position reports from aircraft.

SR-1000-24640 The NAS shall process position reports from properly equipped aircraft in selected terminal areas.

SR-1000-25050 The NAS shall process position reports received from aircraft in remote areas.

SR-1000-45055 The NAS shall process position reports received from aircraft in en route areas

SR-1000-02370 The NAS shall correlate actual flight information to flight plan information for each controlled aircraft.
SR-1000-25080 The NAS shall estimate the position of aircraft operating outside of independent surveillance coverage.
SR-1000-27470 The NAS shall update flight plans based on current position.

3.2.1.3.3 Disseminate Aircraft Position

SR-1000-24830 The NAS shall disseminate aircraft position.
SR-1000-24590 The NAS shall disseminate the position of aircraft in terminal areas independent of aircraft equipage.
SR-1000-03290 The NAS shall disseminate position reports from aircraft.

3.2.1.3.4 Store Aircraft Position Data

SR-1000-02550 The NAS shall store the position of aircraft in terminal areas.
SR-1000-02100 The NAS shall store the position of aircraft in the en route environment.

3.2.2 Determine Trajectory

SR-1000-40360 The NAS shall determine the velocity of aircraft in terminal airspace.
SR-1000-40370 The NAS shall determine the velocity of aircraft in en route airspace.
SR-1000-17260 The NAS shall acquire ground speed information of any aircraft operating within an ADIZ.
SR-1000-40380 The NAS shall determine aircraft trajectories.

- SR-1000-25130 The NAS shall generate aircraft trajectories by an adapted look-ahead time interval.
- SR-1000-24290 The NAS shall generate trajectories across physical ATC facility boundaries for inter-facility flights.
- SR-1000-40390 The NAS shall generate short-term trajectories up to 20 minutes for each aircraft.
- SR-1000-10470 The NAS shall project flight trajectories for all controlled aircraft in US delegated airspace for greater than 20 minutes.
- SR-1000-10480 The NAS shall project flight trajectories for all controlled aircraft expected to enter US delegated airspace for greater than 20 minutes.
- SR-1000-02390 The NAS shall generate a flight trajectory for each controlled aircraft in US delegated airspace based on flight plan information.
    - SR-1000-12180 The NAS shall project a four-dimensional trajectory corresponding to the entire flight plan.
    - SR-1000-02320 The NAS shall generate flight trajectories that include all segments of aircraft flight plan.

SR-1000-25150 The NAS shall update flight path projections.
SR-1000-27490 The NAS shall store the flight plan's trajectory.

3.2.3 Monitor Aircraft Status

3.2.3.1 Acquire Flight Status

SR-1000-40400 The NAS shall detect deviations from the active flight plan.

- SR-1000-27500 The NAS shall store deviations from the active flight plan.

SR-1000-40410 The NAS shall monitor the status of aircraft.

- SR-1000-09090 The NAS shall monitor the progress of aircraft in selected low altitude environments receiving flight following services.
- SR-1000-09100 The NAS shall update the progress of aircraft in selected remote environments receiving flight following services.
- SR-1000-09110 The NAS shall monitor progress of aircraft operating within designated hazardous areas.
    - SR-1000-13410 The NAS shall monitor hazardous area reporting for users operating in NAS designated lake areas.
    - SR-1000-13420 The NAS shall monitor hazardous area reporting for users operating in NAS designated island areas.
    - SR-1000-13430 The NAS shall monitor hazardous area reporting for users operating in NAS designated mountain areas.
    - SR-1000-13440 The NAS shall monitor hazardous area reporting for users operating in NAS designated swamp areas.

SR-1000-40420 The NAS shall store identification information received from aircraft.
SR-1000-25070 The NAS shall store identification information received from aircraft in remote areas.
SR-1000-17840 The NAS shall acquire registration numbers of stolen aircraft.
SR-1000-17850 The NAS shall store registration numbers of stolen aircraft.
SR-1000-24230 The NAS shall acquire flight information for each controlled aircraft inbound towards US delegated airspace.
SR-1000-02230 The NAS shall acquire flight information for each controlled aircraft inbound towards US delegated airspace within a locally adaptable distance from the NAS boundary.
SR-1000-01240 The NAS shall acquire flight plan information for each controlled aircraft about to enter controlled airspace within a locally adaptable time or distance.
SR-1000-01990 The NAS shall acquire flight information for each controlled aircraft in US delegated airspace.
SR-1000-10000 The NAS shall retrieve flight information for each controlled aircraft in US delegated airspace.

3.2.3.2 Monitor Emergency Flight Status

3.2.3.2.1 Acquire Emergency Information

SR-1000-12660 The NAS shall accept an emergency transmission from any user declaring an emergency.
SR-1000-13050 The NAS shall detect overdue aircraft.
SR-1000-13110 The NAS shall retrieve essential information on overdue aircraft.
SR-1000-13120 The NAS shall retrieve essential information on missing aircraft.
SR-1000-19700 The NAS shall determine the location of an aircraft in an emergency situation.
SR-1000-12650 The NAS shall monitor air-to-ground communications to detect emergency transmissions.
SR-1000-13200 The NAS shall monitor transmissions from Emergency Locator Transmitters (ELT).
SR-1000-12700 The NAS shall store all recorded emergency communications
SR-1000-12710 The NAS shall archive all recorded emergency communications.
SR-1000-12800 The NAS shall store essential emergency information.

3.2.3.2.2 Disseminate Emergency Alert

SR-1000-40430 The NAS shall disseminate Emergency Alerts.
SR-1000-40440 The NAS shall alert Air Sea and Rescue of an emergency alert.
SR-1000-12730 The NAS shall alert ATC facilities to the existence of an emergency.
SR-1000-13070 The NAS shall alert specialists when the flight exceeds 30 minutes past its expected time of arrival.
SR-1000-13080 The NAS shall alert specialists when the time for re-establishing contact with an aircraft operating over NAS-designated hazardous areas exceeds 15 minutes.

SR-1000-12850 The NAS shall alert ATC specialists along the proposed route of an aircraft when it fails to respond to communications.

3.2.3.2.3 Respond to Emergency

SR-1000-12810 The NAS shall generate courses of action to respond to emergency situations.

SR-1000-12820 The NAS shall transmit conflict-free flight path recommendations to expedite resolution of emergency situations.

SR-1000-12670 The NAS shall recommend courses of action to any user declaring an emergency.

SR-1000-12830 The NAS shall transmit recommended aerodrome locations to expedite resolution of emergency situations.

SR-1000-12560 The NAS shall respond to requests for assistance from in-flight users.
SR-1000-13020 The NAS shall initiate search and rescue activities.
SR-1000-13010 The NAS shall assist with search and rescue activities.
SR-1000-12720 The NAS shall communicate with a user that has declared an emergency on the existing channel or frequency until frequency is unavailable.

3.2.3.2.4 Coordinate Emergency Efforts

SR-1000-22300 The NAS shall coordinate essential information and emergency alert information between specialists.
SR-1000-13360 The NAS shall disseminate information to agencies involved in search and rescue activities.
SR-1000-13370 The NAS shall coordinate with agencies involved in search and rescue activities.

SR-1000-15900 The NAS shall accept data from external agencies cooperating in search and rescue.

SR-1000-15910 The NAS shall store data from external agencies cooperating in search and rescue.

3.2.3.2.5 Disseminate Emergency Information

SR-1000-12860 The NAS shall alert specialists at the proposed destination of an aircraft when loss of communications is detected.

SR-1000-12790 The NAS shall disseminate information about an emergency to affected facilities.

SR-1000-12910 The NAS shall disseminate essential emergency information upon receipt of specialists' request.

SR-1000-13310 The NAS shall disseminate the geographic coordinates of ELT transmissions.
SR-1000-13350 The NAS shall disseminate Search and Rescue information to specialists.
SR-1000-19730 The NAS shall disseminate essential emergency information to agencies involved in search and rescue activities.

3.2.4 Disseminate Aircraft Status

3.2.4.1 Disseminate Flight Information

SR-1000-01870 The NAS shall alert the specialist when a controlled aircraft's track position is outside of its clearance-based trajectory.

SR-1000-01890 The NAS shall alert the specialist when a controlled aircraft's track position is outside of its clearance-based trajectory in the lateral direction.

SR-1000-01900 The NAS shall alert the specialist when a controlled aircraft's track position is outside of its clearance-based trajectory in the vertical direction.

SR-1000-24850 The NAS shall notify users when their aircraft deviates from its flight plan clearance by a prescribed amount.

SR-1000-40450 The NAS shall accept aircraft flight information requests from Traffic Management Coordinators.

SR-1000-11260 The NAS shall disseminate trajectories based on flight plan information.

SR-1000-09230 The NAS shall notify the specialist when aircraft approach special use airspace.

SR-1000-31050 The NAS shall disseminate aircraft flight information to Traffic Management Coordinators.

SR-1000-40460 The NAS shall disseminate aircraft flight information to specialists.

SR-1000-08780 The NAS shall disseminate current flight activity information in Restricted Areas.

SR-1000-08790 The NAS shall disseminate current flight activity information in Warning Areas.

SR-1000-17380 The NAS shall disseminate position of aircraft operating within an ADIZ to the military.

SR-1000-24560 The NAS shall disseminate the position of aircraft in terminal areas to specialists.

3.2.4.2 Issue Flight Status Reports

SR-1000-17790 The NAS shall identify aircraft of special interest for law enforcement authorities.

SR-1000-17800 The NAS shall disseminate identity of aircraft of special interest to law enforcement agencies.

SR-1000-17810 The NAS shall disseminate position information of aircraft of special interest to law enforcement agencies.

SR-1000-45890 The NAS shall disseminate registration numbers of aircraft of special interest to law enforcement agencies.

3.3 Control Traffic

3.3.1 Manage Separation Information

3.3.1.1 Analyze Separation Information

SR-1000-25100 The NAS shall establish minimum separation standards based on the operational environment.

SR-1000-40470 The NAS shall establish minimum separation standards for the en route environment.

SR-1000-40480 The NAS shall establish minimum separation standards for the terminal environment.

SR-1000-40490 The NAS shall establish minimum separation standards for the oceanic environment.

SR-1000-24980 The NAS shall detect aircraft violations of separation standards.

SR-1000-01920 The NAS shall detect aircraft-to-aircraft separation standards violations.

SR-1000-24890 The NAS shall detect aircraft failures to maintain minimum safe altitude above the terrain.

SR-1000-24490 The NAS shall detect violations of simultaneous parallel approach runway separation standards.

SR-1000-01940 The NAS shall predict violations of aircraft separation standards.

SR-1000-25770 The NAS shall predict aircraft-terrain separation standards violations based on trajectory.

SR-1000-25780 The NAS shall predict aircraft-obstacle separation standards violations based on trajectory.

SR-1000-40500 The NAS shall predict aircraft-to-aircraft separation standards violations based on trajectory.

SR-1000-40510 The NAS shall predict aircraft-to-airspace separation standards violations based on trajectory.

SR-1000-40520 The NAS shall predict an aircraft-to-airspace separation standards violation of Special Use Airspace.

SR-1000-24480 The NAS shall separate aircraft on simultaneous parallel runway approaches.

SR-1000-40530 The NAS shall generate aircraft maneuvers to avoid separation standards violations.

SR-1000-26130 The NAS shall generate aircraft maneuvers to avoid aircraft-terrain separation standards violations.

SR-1000-24360 The NAS shall generate aircraft maneuvers to avoid aircraft-to-aircraft separation standards violations.

SR-1000-24370 The NAS shall generate aircraft maneuvers to avoid aircraft-to-airspace separation standards violations.

SR-1000-26140 The NAS shall generate aircraft maneuvers to avoid aircraft-obstacle separation standards violations.

SR-1000-24950 The NAS shall generate resolution advisories for aircraft in violation of separation standards.

3.3.1.2 Disseminate Separation Assessment Results

SR-1000-40540 The NAS shall disseminate alerts for separation standards violations.

SR-1000-26000 The NAS shall disseminate aircraft identification with aircraft-terrain separation standards violation alerts.
SR-1000-26020 The NAS shall disseminate aircraft identification with aircraft-obstacle separation standards violation alerts.
SR-1000-40550 The NAS shall disseminate aircraft identification with aircraft-aircraft separation standards violation alerts.
SR-1000-40560 The NAS shall disseminate aircraft identification with aircraft-airspace separation standards violation alerts.
SR-1000-04350 The NAS shall provide traffic alerts to participating aircraft within 5 nmi, 500 feet below and 500 above special use airspace.
SR-1000-40570 The NAS shall alert users to predicted aircraft separation standards violations.

SR-1000-25840 The NAS shall alert users to predicted aircraft-obstacle separation violations.
SR-1000-25820 The NAS shall alert users to predicted aircraft-terrain separation standards violations.
SR-1000-40580 The NAS shall alert users to predicted aircraft-aircraft separation violations.

SR-1000-40590 The NAS shall alert users to predicted aircraft-airspace separation violations.
SR-1000-25110 The NAS shall alert specialists to predicted violation of separation standards.

SR-1000-25850 The NAS shall alert specialists to predicted aircraft-terrain separation violations.
SR-1000-25870 The NAS shall alert specialists to predicted aircraft-obstacle separation violations.
SR-1000-40600 The NAS shall alert specialists to predicted aircraft-aircraft separation violations.
SR-1000-40610 The NAS shall alert specialists to predicted aircraft-airspace separation violations.

SR-1000-40620 The NAS shall disseminate aircraft maneuvers to avoid predicted separation standards violations.
SR-1000-40630 The NAS shall disseminate aircraft maneuvers to avoid predicted aircraft-terrain separation standards violations.
SR-1000-40640 The NAS shall disseminate aircraft maneuvers to avoid predicted aircraft-to-aircraft separation standards violations.
SR-1000-40650 The NAS shall disseminate aircraft maneuvers to avoid predicted aircraft-to-airspace separation standards violations.
SR-1000-40660 The NAS shall disseminate aircraft maneuvers to avoid predicted aircraft-obstacle separation standards violations.

3.3.2 Synchronize Traffic

3.3.2.1 Analyze Synchronization Information

SR-1000-30290 The NAS shall analyze conditions that affect traffic synchronization.
- SR-1000-30470 The NAS shall analyze arrival sequences.
- SR-1000-40670 The NAS shall analyze departure sequences.
- SR-1000-10230 The NAS shall evaluate alternate trajectories for sequencing.
  - SR-1000-16210 The NAS shall evaluate route of flight alternatives to resolve possible airspace conflicts among military operations.
  - SR-1000-16250 The NAS shall evaluate departure time alternatives to resolve possible airspace conflicts among military operations.

SR-1000-10020 The NAS shall generate aircraft synchronization plans.
- SR-1000-40680 The NAS shall establish departure sequences.
- SR-1000-30460 The NAS shall generate surface synchronization plans based on departures.
- SR-1000-09990 The NAS shall establish arrival sequences.

SR-1000-10530 The NAS shall sequence VFR aircraft in the arrival phase of flight.
SR-1000-10550 The NAS shall sequence VFR aircraft in the departure phase of flight.
SR-1000-02350 The NAS shall generate clearances to support sequencing.
- SR-1000-02410 The NAS shall assist specialists in reestablishing trajectory conformance.

3.3.2.2 Disseminate Synchronization Information

SR-1000-40690 The NAS shall disseminate traffic synchronization plans.
- SR-1000-40700 The NAS shall disseminate the traffic synchronization plan to users.
- SR-1000-40710 The NAS shall disseminate the traffic synchronization plan to traffic management coordinators.
- SR-1000-40720 The NAS shall disseminate the traffic synchronization plan to specialists.
- SR-1000-10070 The NAS shall disseminate traffic sequencing advisories to specialists.

SR-1000-22010 The NAS shall display synchronization plan noncompliance.

3.3.3 Control Aircraft

3.3.3.1 Accept User Communications

SR-1000-10270 The NAS shall accept pre-flight departure requests from users.
SR-1000-01140 The NAS shall accept departure time requests.
SR-1000-05530 The NAS shall accept pilot reports (PIREP).
SR-1000-40730 The NAS shall accept requests for assistance from pilots.
SR-1000-05040 The NAS shall accept requests to transition from VFR to IFR.
SR-1000-08920 The NAS shall accept requests for flight following services.

3.3.3.2 Generate Air Traffic Control Directives

SR-1000-01180 The NAS shall generate departure clearances.
SR-1000-30390 The NAS shall generate taxi clearances.

3.3.3.3 Disseminate Air Traffic Control Information

SR-1000-40740 The NAS shall disseminate control directives
- SR-1000-01190 The NAS shall disseminate expected departure times.
- SR-1000-30400 The NAS shall disseminate taxi clearances to pilots.
- SR-1000-02900 The NAS shall disseminate flight plan clearances to users.
- SR-1000-09130 The NAS shall disseminate safety advisories to aircraft.
- SR-1000-19780 The NAS shall disseminate traffic advisories to VFR aircraft.
- SR-1000-40750 The NAS shall disseminate traffic advisories to pilots when applying VFR separation services.
- SR-1000-09120 The NAS shall disseminate traffic advisories upon user request.
- SR-1000-09210 The NAS shall disseminate advisories to aircraft approaching special use airspace.
- SR-1000-07500 The NAS shall disseminate delay advisories in effect along the users proposed flight path.
- SR-1000-11770 The NAS shall disseminate flight restrictions to users.

SR-1000-06630 The NAS shall disseminate safety critical information.
- SR-1000-08470 The NAS shall disseminate recommendations for hazardous weather avoidance.
- SR-1000-07440 The NAS shall disseminate NAS status information to users.

3.3.4 Coordinate Control of Aircraft

3.3.4.1 Coordinate Surface Traffic

SR-1000-40770 The NAS shall communicate with vehicles on the airport surface.
- SR-1000-30430 The NAS shall disseminate surface movement information to vehicles on the airport surface.
- SR-1000-40780 The NAS shall disseminate surface movement information to aircraft operating on the airport surface.

3.3.4.2 Transfer Aircraft Control

SR-1000-03150 The NAS shall transfer control responsibilities for aircraft between air traffic domains.
SR-1000-40790 The NAS shall transfer control responsibilities for aircraft between air traffic control facilities.
SR-1000-40800 The NAS shall transfer control responsibilities for a controlled aircraft within air traffic domains.
SR-1000-40810 The NAS shall transfer control responsibilities to the DoD at designated aerodromes.
SR-1000-40820 The NAS shall maintain separation between aircraft while transferring control responsibilities.

SR-1000-40830 The NAS shall accept requests to close flight plans.
SR-1000-27730 The NAS shall close flight plans.

3.4 Support Flight Operations

3.4.1 Manage Weather Information

3.4.1.1 Collect Weather Data

3.4.1.1.1 Collect Flight Planning Weather Information

SR-1000-05050 The NAS shall acquire weather information covering the US delegated airspace for flight planning.

- SR-1000-05410 The NAS shall acquire weather information aloft for all U.S. delegated airspace for flight planning.
  - SR-1000-05890 The NAS shall acquire forecast winds aloft information.
- SR-1000-05160 The NAS shall acquire current surface weather information for flight planning.
- SR-1000-40835 The NAS shall acquire en route weather information for flight planning.
  - SR-1000-05690 The NAS shall acquire area forecast weather information for flight planning.
  - SR-1000-05780 The NAS shall acquire special forecast weather information for flight planning.
- SR-1000-05820 The NAS shall acquire terminal area forecast information for flight planning.
- SR-1000-40840 The NAS shall acquire hazardous weather information for flight planning.
  - SR-1000-32640 The NAS shall detect thunderstorm activity for flight planning.
- SR-1000-40850 The NAS shall acquire weather information from meteorologists for use in flight planning.
- SR-1000-05140 The NAS shall acquire current weather information from designated private sources for flight planning.
- SR-1000-32520 The NAS shall acquire visibility information for flight planning.
  - SR-1000-32500 The NAS shall acquire cloud layer height for flight planning.
  - SR-1000-32510 The NAS shall acquire cloud coverage for flight planning.
  - SR-1000-05340 The NAS shall acquire runway visibility from designated runways.

3.4.1.1.2 Collect Flow Control Weather Information

SR-1000-07730 The NAS shall acquire forecast weather information for the NAS delegated airspace for flow control.
SR-1000-07700 The NAS shall acquire current weather information for the NAS delegated airspace for flow control.
SR-1000-11320 The NAS shall acquire special short-term flow control advisory weather information for the NAS delegated airspace.
SR-1000-40860 The NAS shall acquire weather information for determining aerodrome capacity.

3.4.1.1.3 Collect Weather Information for Hazardous Weather Avoidance

SR-1000-06270 The NAS shall identify weather conditions that are hazardous to aviation.
SR-1000-40870 The NAS shall acquire wind information from designated points on aerodrome surfaces for hazardous weather avoidance.
SR-1000-40880 The NAS shall acquire wind information within terminal areas for hazardous weather avoidance.

3.4.1.1.4 Collect Advisory Weather Information

SR-1000-06270 The NAS shall identify those weather conditions that are potentially hazardous to aviation for weather advisories.
SR-1000-09430 The NAS shall acquire weather information that pose a hazard to VFR aircraft for weather advisories.

3.4.1.2 Store Weather Data

3.4.1.2.1 Store Flight Planning Weather Information

SR-1000-05060 The NAS shall store weather information covering US delegated airspace for flight planning.

SR-1000-05730 The NAS shall store winds aloft forecast weather information for flight planning.
SR-1000-05170 The NAS shall store surface aviation weather for flight planning.
SR-1000-05300 The NAS shall store special weather information for flight planning.
SR-1000-40890 The NAS shall store en route weather information for flight planning.
SR-1000-05670 The NAS shall store terminal area forecast weather information for flight planning.
SR-1000-05760 The NAS shall store special short-term advisory weather information for flight planning.
SR-1000-40900 The NAS shall store hazardous weather information for flight planning.
SR-1000-40910 The NAS shall store weather information from designated private sources for flight planning.
SR-1000-40920 The NAS shall store visibility information for flight planning.
SR-1000-40930 The NAS shall store current weather information for flight planning.

3.4.1.2.2 Store Flow Control Weather Information

SR-1000-07740 The NAS shall store forecast weather information for NAS delegated airspace for flow control.
SR-1000-07710 The NAS shall store current weather information for NAS delegated airspace for flow control.

3.4.1.2.3 Store Weather Information for Hazardous Weather Avoidance

SR-1000-40940 The NAS shall store wind information from designated points on aerodrome surfaces for hazardous weather avoidance.

SR-1000-40950 The NAS shall store wind information within terminal areas for hazardous weather avoidance.

3.4.1.2.4 Store Advisory Weather Information

SR-1000-09450 The NAS shall store weather information that pose a hazard to VFR aircraft for weather advisories.

3.4.1.3 Assess Weather Impact

SR-1000-19350 The NAS shall determine runway surface condition based on weather observations for flight planning.
SR-1000-40960 The NAS shall determine the impact of weather information on flow control.
SR-1000-40970 The NAS shall determine the impact of weather information on hazardous weather avoidance.
SR-1000-40980 The NAS shall determine the impact of weather information on weather advisories.

3.4.1.4 Disseminate NAS Weather Information

3.4.1.4.1 Disseminate Flight Planning Weather Information

SR-1000-40990 The NAS shall disseminate weather information covering the US delegated airspace for flight planning.

SR-1000-05410 The NAS shall disseminate weather information aloft for all U.S. delegated airspace for flight planning.

SR-1000-05230 The NAS shall disseminate surface aviation weather information for flight planning.

SR-1000-41000 The NAS shall disseminate en route weather information for flight planning.
SR-1000-41010 The NAS shall disseminate hazardous weather information for flight planning
SR-1000-06250 The NAS shall disseminate the predicted movement of thunderstorms for flight planning.
SR-1000-07110 The NAS shall disseminate weather information to users for flight planning.
SR-1000-41020 The NAS shall disseminate weather information to specialists.
SR-1000-06710 The NAS shall disseminate route-oriented weather information for flight planning.
SR-1000-05400 The NAS shall disseminate visibility information for flight planning.
SR-1000-05330 The NAS shall disseminate special weather observations for flight planning.

3.4.1.4.2 Disseminate Flow Control Weather Information

SR-1000-07480 The NAS shall disseminate forecast weather along users proposed flight path for flow control.

SR-1000-07470 The NAS shall disseminate current weather along the users proposed flight path for flow control.
SR-1000-41030 The NAS shall disseminate weather information from U.S. delegated airspace for flow control.

SR-1000-07750 The NAS shall disseminate forecast weather data for the airspace delegated to the NAS for flow control.
SR-1000-07720 The NAS shall disseminate current weather data for the airspace delegated to the NAS for flow control.
SR-1000-32360 The NAS shall disseminate weather information to Traffic Management Specialists.
SR-1000-41040 The NAS shall disseminate weather information to Traffic Management Coordinators.

3.4.1.4.3 Disseminate Weather Information for Hazardous Weather Avoidance

SR-1000-41050 The NAS shall disseminate wind information for hazardous weather avoidance.

SR-1000-41060 The NAS shall disseminate wind information in terminal areas for hazardous weather avoidance.
SR-1000-41070 The NAS shall disseminate wind information from designated points on aerodrome surfaces.

SR-1000-41080 The NAS shall disseminate hazardous weather information to users.
SR-1000-06870 The NAS shall disseminate hazardous weather information to specialist.

SR-1000-08000 The NAS shall alert specialists to the location of hazardous weather.
SR-1000-08290 The NAS shall disseminate intensity levels of potentially hazardous weather by geographic area to specialists.

3.4.1.4.4 Disseminate Weather Advisories

SR-1000-41090 The NAS shall disseminate weather advisories at designated aerodromes.
SR-1000-09300 The NAS shall disseminate weather advisories information upon users request.
SR-1000-41100 The NAS shall disseminate weather advisories to users.

SR-1000-19790 The NAS shall provide weather advisories to aircraft in flight.
SR-1000-09300 The NAS shall disseminate hazardous weather advisories to users.

SR-1000-09490 The NAS shall disseminate weather information that pose a hazard to VFR aircraft.
SR-1000-09350 The NAS shall disseminate current terminal area weather advisories.
SR-1000-09330 The NAS shall disseminate current aerodrome weather advisories.

3.4.2 Navigation

SR-1000-41110 The NAS shall support navigation for all phases of flight.
SR-1000-14080 The NAS shall comply with ICAO navigation requirements.
SR-1000-13990 The NAS shall restrict dissemination of navigation guidance information in accordance with the military/FAA agreements.

3.4.2.1 Terrestrial sourced navigation

SR-1000-41120 The NAS shall disseminate en route navigation guidance from ground based sources.

SR-1000-41130 The NAS shall disseminate terminal navigation guidance from ground based sources.
SR-1000-14230 The NAS shall provide navigation guidance for airport departures from ground based sources.
SR-1000-41140 The NAS shall disseminate navigation guidance for on-airport navigation from ground based sources.
SR-1000-41150 The NAS shall disseminate navigation guidance for on-airport position monitoring.
SR-1000-14100 The NAS shall disseminate a unique identifier for each en route ground-based navigational guidance information source.
SR-1000-14140 The NAS shall disseminate navigation guidance for runway approach and landing.
SR-1000-13940 The NAS shall disseminate en route navigation guidance distance information.
SR-1000-41155 The NAS shall disseminate terminal navigation guidance distance information.
SR-1000-41160 The NAS shall disseminate precision signals for runway on-course guidance.
SR-1000-41170 The NAS shall disseminate precision signals for runway glide path descent guidance.
SR-1000-13650 The NAS shall disseminate en route navigation guidance position information.
SR-1000-14170 The NAS shall disseminate terminal navigation guidance position information.

3.4.2.2 Space sourced navigation

SR-1000-41180 The NAS shall disseminate augmentation data to support GNSS based navigation for all phases of flight.
SR-1000-41190 The NAS shall disseminate augmentation data to enable GNSS based precision approaches and departures.

3.4.2.3 Provide visual guidance

SR-1000-41200 The NAS shall provide visual navigation glide path guidance for landing at designated airports.
SR-1000-41210 The NAS shall provide visual navigation guidance on the extended runway centerline at designated airports.

3.5 Monitor NAS Operations

3.5.1 Monitor NAS Flight Operations

3.5.1.1 Generate Current Flight Operation Statistics

3.5.1.1.1 Determine Current Capacity

SR-1000-10700 The NAS shall monitor information pertinent to capacity for the current flight day.
- SR-1000-09770 The NAS shall monitor local acceptance rate data for each runway at designated aerodromes.

SR-1000-10570 The NAS shall determine the capacity of sectors.

SR-1000-41220 The NAS shall determine the capacity for designated aerodromes.
- SR-1000-41230 The NAS shall determine the arrival capacity for designated aerodromes.
- SR-1000-41240 The NAS shall determine the departure capacity for designated aerodromes.

3.5.1.1.2 Determine Current Demand

SR-1000-10720 The NAS shall monitor information affecting current demand.
- SR-1000-11570 The NAS shall acquire traffic count summary information for each sector in the NAS.
- SR-1000-11540 The NAS shall measure traffic saturation for selected aerodromes.

SR-1000-10730 The NAS shall use information affecting current demand.
- SR-1000-11520 The NAS shall analyze potential traffic saturation for selected airspace.
- SR-1000-11530 The NAS shall analyze potential traffic saturation for selected aerodromes.

SR-1000-41250 The NAS shall determine current demand conditions.
- SR-1000-10590 The NAS shall determine the current demand on sectors.
- SR-1000-41260 The NAS shall determine the current demand for designated aerodromes.

3.5.1.2 Generate Flight Operation Projections

3.5.1.2.1 Predict Capacity

SR-1000-30710 The NAS shall monitor future flight day information affecting capacity projections.

SR-1000-10710 The NAS shall analyze information affecting current flight day capacity projections.
- SR-1000-41270 The NAS shall analyze weather information to predict flight day capacity.
  - SR-1000-07950 The NAS shall consider surface weather conditions in calculating runway capacity projection at aerodromes.
- SR-1000-09790 The NAS shall consider runway surface conditions in calculating runway capacity projections at designated aerodromes.

SR-1000-41280 The NAS shall determine flight day capacity.
- SR-1000-10610 The NAS shall determine the capacity of sectors.
- SR-1000-41290 The NAS shall determine the capacity of aerodromes.

SR-1000-30820 The NAS shall update capacity projections.

SR-1000-10910 The NAS shall update aerodrome capacity projections.
SR-1000-41300 The NAS shall update sector capacity projections.

3.5.1.2.2 Predict Demand

SR-1000-41310 The NAS shall analyze information pertinent to flight day demand projections.
SR-1000-41320 The NAS shall analyze active flight plan information to determine flight day demand.
SR-1000-41330 The NAS shall determine flight day demand.
SR-1000-10630 The NAS shall determine the future demand on sectors.
SR-1000-41340 The NAS shall determine the future demand on aerodromes.
SR-1000-30870 The NAS shall update demand projections.

3.5.1.3 Disseminate Flight Operations Statistics

3.5.1.3.1 Disseminate Capacity Information

SR-1000-30850 The NAS shall disseminate capacity information to specialists.
SR-1000-41350 The NAS shall disseminate flight day capacity predictions.
SR-1000-24000 The NAS shall disseminate capacity data to users.
SR-1000-41360 The NAS shall disseminate capacity projections to ATCSCC specialists.
SR-1000-41370 The NAS shall disseminate capacity projections Traffic Management Coordinators.
SR-1000-41380 The NAS shall disseminate future flight day capacity projections for sectors.
SR-1000-41390 The NAS shall disseminate future flight day capacity projections for aerodromes.

SR-1000-41400 The NAS shall accept capacity projection requests.
SR-1000-10800 The NAS shall accept capacity projection requests from Traffic Management Coordinators.
SR-1000-30630 The NAS shall accept requests for future flight day capacity projections.

3.5.1.3.2 Disseminate Demand Information

SR-1000-41410 The NAS shall disseminate demand information.
SR-1000-32410 The NAS shall disseminate flight day demand information to specialists.
SR-1000-41420 The NAS shall disseminate the number of planned IFR flights.
SR-1000-41430 The NAS shall disseminate IFR traffic demand projections to ATCSCC specialists.
SR-1000-41440 The NAS shall disseminate sector demand projections.

SR-1000-41450 The NAS shall accept demand projection requests.
SR-1000-10830 The NAS shall accept demand projection requests from Traffic Management Coordinators.
SR-1000-30540 The NAS shall accept requests for future flight day demand projections.

3.5.2 Maintain NAS Infrastructure

3.5.2.1 Monitor Infrastructure Operations

3.5.2.1.1 Monitor Aeronautical Information

SR-1000-41460 The NAS shall acquire aeronautical information.
SR-1000-41470 The NAS shall verify aeronautical information.
SR-1000-41480 The NAS shall store aeronautical information.
SR-1000-41490 The NAS shall retrieve aeronautical information.

3.5.2.1.2 Monitor Airport Conditions

SR-1000-07930 The NAS shall monitor runway conditions at designated aerodromes.

3.5.2.1.3 Monitor NAS Systems

SR-1000-31670 The NAS shall monitor the status of operational systems.
SR-1000-18570 The NAS shall verify operational equipment status at unmanned facilities.
SR-1000-17900 The NAS shall monitor the performance of all systems.
SR-1000-18190 The NAS shall monitor status of surveillance systems.
SR-1000-18230 The NAS shall monitor performance of surveillance systems.
SR-1000-18200 The NAS shall monitor status of navigation systems.
SR-1000-18240 The NAS shall monitor performance of navigation systems.

SR-1000-41500 The NAS shall remotely monitor operational systems status.
SR-1000-18060 The NAS shall monitor status of equipment without degrading equipment availability.

3.5.2.1.4 Perform Flight Inspections

SR-1000-41510 The NAS shall perform flight inspections to verify performance of systems that are critical to safety.
SR-1000-41530 The NAS shall conduct flight inspections to verify the performance of new systems.

3.5.2.2 Disseminate Infrastructure Status

3.5.2.2.1 Disseminate Aeronautical Information

SR-1000-41540 The NAS shall disseminate aeronautical information.
SR-1000-07130 The NAS shall disseminate aeronautical information to users.
SR-1000-07330 The NAS shall disseminate aeronautical information to specialists.
SR-1000-07980 The NAS shall disseminate aeronautical information to designated military officials.

3.5.2.2.2 Disseminate Navigation Systems Status

SR-1000-31790 The NAS shall disseminate status of navigation systems.
SR-1000-41550 The NAS shall disseminate the status of operational systems.

SR-1000-41560 The NAS shall disseminate the performance of all systems.
SR-1000-41570 The NAS shall disseminate systems parameters.

3.5.2.2.3 Alerts of NAS System Failures

SR-1000-41580 The NAS shall disseminate an alert when a NAS system fails.
SR-1000-17930 The NAS shall alert specialists when a NAS system fails.
SR-1000-31690 The NAS shall notify users when a navigation system fails.
SR-1000-41590 The NAS shall alert specialists when a navigation system fails.
SR-1000-17960 The NAS shall disseminate an alert when system operating parameters are out of tolerance.
SR-1000-18310 The NAS shall display alarms until the condition has been corrected.
SR-1000-41600 The NAS shall store system failure alerts.

3.5.2.3 Maintain NAS Operational Integrity

3.5.2.3.1 Perform Maintenance

SR-1000-31760 The NAS shall perform preventative maintenance on operational systems.
SR-1000-18380 The NAS shall determine preventive maintenance intervals for all NAS equipment.
SR-1000-18370 The NAS shall perform corrective maintenance on operational systems.
SR-1000-18460 The NAS shall determine the cause of system failures.
SR-1000-18510 The NAS shall perform on-site maintenance of facilities.
SR-1000-18520 The NAS shall perform physical inspections of facilities.

3.5.2.3.2 Establish Communications

SR-1000-18710 The NAS shall establish communications to assist maintenance activities.

3.5.2.3.3 Store Performance and Maintenance Information

SR-1000-18010 The NAS shall acquire data on completed equipment maintenance.
SR-1000-18820 The NAS shall store maintenance records.
SR-1000-41610 The NAS shall store equipment performance measurements.
SR-1000-18830 The NAS shall retrieve maintenance records on request.

3.5.2.3.4 Analyze Maintenance Data

SR-1000-31770 The NAS shall analyze maintenance information.

3.5.2.3.5 Disseminate Maintenance Information

SR-1000-18050 The NAS shall disseminate results of analysis of maintenance actions.
SR-1000-18760 The NAS shall disseminate maintenance technical data to specialist upon request.
SR-1000-18810 The NAS shall disseminate reports on maintenance problem trends.

3.5.2.3.6 Reconfigure NAS Services

SR-1000-21570 The NAS shall provide continuous notification of an ARTCC's status to each of its backup facilities.

SR-1000-21580 The NAS shall notify all associated ATC facilities when an ATC facility has failed.
SR-1000-21520 The NAS shall reconfigure air-to-ground communications within the backup facility.
SR-1000-21560 The NAS shall exchange status condition information for backup purposes.
SR-1000-18270 The NAS shall notify specialists of automatic switchovers of designated equipment.
SR-1000-21610 The NAS shall reassign operational and backup sectors to any operating or training position in the facility.
SR-1000-18150 The NAS shall adjust monitored parameters of designated systems from designated remote locations to keep parameters within specified ranges.

3.5.2.3.7 Verify Service Restoration

SR-1000-18450 The NAS shall certify restoration of services following the completion of maintenance actions.
SR-1000-18180 The NAS shall certify equipment performance of designated systems from designated remote locations.
SR-1000-31750 The NAS shall verify operation of repaired operational systems.

3.6 Plan NAS Usage

3.6.1 Plan Traffic Flow

3.6.1.1 Assess Traffic Flow Constraints

3.6.1.1.1 Analyze Constraints

SR-1000-30900 The NAS shall evaluate capacity and demand.
- SR-1000-41640 The NAS shall compare flight day capacity predictions against demand predictions.
- SR-1000-41650 The NAS shall generate flight day system impact information based on flight day demand and capacity comparisons.
- SR-1000-41660 The NAS shall analyze traffic demand information.

SR-1000-30770 The NAS shall determine flight day scenarios.

SR-1000-30740 The NAS shall analyze flight day scenarios.
- SR-1000-30760 The NAS shall analyze flight day scenarios for imbalances in demand and capacity.
- SR-1000-30750 The NAS shall predict the impact of imbalances found in flight day scenarios.

3.6.1.2 Generate Traffic Flow Management Strategies

SR-1000-30800 The NAS shall collaborate with users on the development of traffic flow management strategy alternatives.

SR-1000-41670 The NAS shall generate traffic flow management strategies.
- SR-1000-41680 The NAS shall generate special event flow strategies.
- SR-1000-30780 The NAS shall generate flight day strategies.
  - SR-1000-30810 The NAS shall assess traffic flow management scenarios to develop new strategies.
  - SR-1000-11960 The NAS shall generate inter-facility traffic flow plans.
  - SR-1000-11980 The NAS shall generate local flow restrictions.
  - SR-1000-11740 The NAS shall generate flight day strategies based on airspace capacity.
  - SR-1000-11750 The NAS shall generate flight day strategies based on runway capacity.
- SR-1000-41690 The NAS shall generate air traffic control plans for national emergencies.

SR-1000-41700 The NAS shall determine the impact of proposed flight day flow strategies.

SR-1000-11670 The NAS shall analyze operational alternatives based on demand information.
- SR-1000-11660 The NAS shall analyze flight restrictions for specific aircraft based on demand information.
- SR-1000-11810 The NAS shall analyze alternate trial rerouting of proposed aircraft flight plans to resolve or minimize demand conditions.

3.6.1.3 Disseminate Traffic Flow Plans

SR-1000-07280 The NAS shall disseminate traffic flow plans prior to becoming effective.
SR-1000-41710 The NAS shall disseminate special event strategies.
SR-1000-29010 The NAS shall disseminate special event strategies to specialists.
SR-1000-41720 The NAS shall disseminate flight day flow strategies.
SR-1000-11970 The NAS shall disseminate inter-facility traffic flow plans.
SR-1000-07280 The NAS shall disseminate preferred route information at least 24 hours prior to it becoming effective.
SR-1000-09610 The NAS shall disseminate flow management information to the local Traffic Management Coordinators.
SR-1000-31060 The NAS shall disseminate flight day flow strategies to specialists.
SR-1000-41730 The NAS shall disseminate flight day flow strategies to users.
SR-1000-31080 The NAS shall implement traffic flow strategies.
SR-1000-31020 The NAS shall coordinate traffic flow strategies with specialists.
SR-1000-41740 The NAS shall coordinate traffic flow strategies with users.
SR-1000-41750 The NAS shall disseminate air traffic control plans for national emergencies.
SR-1000-31090 The NAS shall modify current flow strategies in response to changing air traffic conditions.
SR-1000-41760 The NAS shall analyze flight day user exemption requests.
SR-1000-41770 The NAS shall monitor flight day flow strategy compliance.

3.6.2 Assess Traffic Flow Performance

3.6.2.1 Evaluate Flow Performance

3.6.2.1.1 Store Flight Day Information

SR-1000-31140 The NAS shall record flight day performance information.
SR-1000-31130 The NAS shall archive flight day performance information.
SR-1000-31110 The NAS shall store flight day performance information.

3.6.2.1.2 Evaluate Stored Information

SR-1000-31150 The NAS shall assess the performance of the NAS.
SR-1000-12010 The NAS shall evaluate the effectiveness of flow restrictions implemented in the NAS.
SR-1000-31160 The NAS shall identify deficiencies in the capacity of selected airspace.
SR-1000-18800 The NAS shall analyze trends in maintenance problems.
SR-1000-19000 The NAS shall correlate equipment performance measurements for trend analysis.
SR-1000-19010 The NAS shall correlate equipment performance measurements for failure anticipation rates.

3.6.2.1.3 Generate Performance Reports

SR-1000-31120 The NAS shall retrieve flight day performance information.
SR-1000-41790 The NAS shall generate reports on equipment performance.

SR-1000-41800 The NAS shall generate reports on maintenance activities.
SR-1000-31170 The NAS shall generate proposals to correct identified capacity deficiencies.
SR-1000-42450 The NAS shall generate flight day performance reports.

3.6.2.2 Disseminate Performance Reports

SR-1000-41810 The NAS shall disseminate equipment performance information.
SR-1000-18870 The NAS shall disseminate reports on equipment performance.
SR-1000-19020 The NAS shall disseminate equipment performance measurements for trend analysis.
SR-1000-19030 The NAS shall disseminate equipment performance measurements for failure anticipation rates.
SR-1000-18880 The NAS shall disseminate reports on maintenance activities.
SR-1000-18890 The NAS shall disseminate reports on equipment repair activities.
SR-1000-42460 The NAS shall disseminate flight day performance reports.

3.6.3 Manage Airspace Configurations

3.6.3.1 Collect Airspace Constraints

3.6.3.1.1 Acquire Special Use Airspace Information

SR-1000-41820 The NAS shall acquire special use airspace information.
SR-1000-15380 The NAS shall acquire data on boundaries of special use airspace.
SR-1000-15400 The NAS shall acquire data on the status of special use airspace.
SR-1000-15990 The NAS shall acquire airspace reservations from military users.
SR-1000-16070 The NAS shall acquire special use airspace reservations.

3.6.3.1.2 Collect Geographic Information

SR-1000-41830 The NAS shall acquire terrain and obstacle elevation information.
SR-1000-41840 The NAS shall acquire terrain elevation information.
SR-1000-02590 The NAS shall acquire terrain elevation information.
SR-1000-25300 The NAS shall acquire information about terrain throughout the area of NAS responsibility.
SR-1000-25380 The NAS shall acquire terrain elevation information for the continental U.S. in grid form.
SR-1000-25480 The NAS shall acquire terrain information.
SR-1000-41850 The NAS shall acquire obstacle elevation information.
SR-1000-15340 The NAS shall acquire location information accurate to within one arc second for all known obstacles whose height exceeds the surrounding terrain by 200 feet throughout the area of US delegated airspace.
SR-1000-15350 The NAS shall acquire information on all man-made obstacles that are greater than 200 feet above the surrounding terrain.

SR-1000-25320 The NAS shall acquire information about manmade obstacles throughout the area of NAS responsibility.

SR-1000-25510 The NAS shall acquire manmade obstacle information.

SR-1000-15300 The NAS shall establish a geographic information grid so that every point in the United States is within 1 nautical mile of a grid point.

3.6.3.1.3 Store Airspace Information

SR-1000-41860 The NAS shall store special use airspace information.

SR-1000-15390 The NAS shall store boundaries of special use airspace.

SR-1000-09240 The NAS shall store data on the status of special use airspace.

SR-1000-16040 The NAS shall store airspace reservations from military users.

SR-1000-41870 The NAS shall store terrain and obstacle information.

SR-1000-25310 The NAS shall store information about terrain throughout the area of NAS responsibility.

SR-1000-25390 The NAS shall store terrain elevation information for the continental U.S. in grid form.

SR-1000-25330 The NAS shall store information about manmade obstacles throughout the area of NAS responsibility.

3.6.3.1.4 Accept Airspace Reservation Requests

SR-1000-41880 The NAS shall accept airspace reservation requests.

SR-1000-16080 The NAS shall accept special use airspace reservations.

SR-1000-13190 The NAS shall accept airspace reservations submitted by aircraft.

SR-1000-13140 The NAS shall accept airspace reservations from search and rescue agencies.

SR-1000-41890 The NAS shall accept airspace reservation amendments.

SR-1000-27640 The NAS shall accept airspace reservation amendments submitted by search and rescue agencies.

SR-1000-16000 The NAS shall accept airspace reservations from military users.

SR-1000-15980 The NAS shall respond to national defense initiatives in accordance with Executive Orders.

SR-1000-16050 The NAS shall disseminate airspace reservations from military users.

SR-1000-16300 The NAS shall acquire requests for airspace reservations based on emergency order of precedence.

3.6.3.1.5 Altitude Reservations

SR-1000-41900 The NAS shall provide altitude reservation services.

SR-1000-15740 The NAS shall accept altitude reservation requests.

SR-1000-15760 The NAS shall acquire altitude reservations.

SR-1000-15830 The NAS shall evaluate trial altitude reservations for potential conflicts with approved altitude reservations.

SR-1000-15840 The NAS shall evaluate pending altitude reservations for potential conflicts with approved altitude reservations.

SR-1000-16230 The NAS shall evaluate altitude alternatives to resolve possible airspace conflicts among military operations.
SR-1000-15820 The NAS shall accept entry of trial altitude reservations.
SR-1000-16310 The NAS shall respond to requests for airspace reservations based on emergency order of precedence.
SR-1000-15790 The NAS shall approve altitude reservations.
SR-1000-15770 The NAS shall store altitude reservations.
SR-1000-15810 The NAS shall disseminate altitude reservations.
SR-1000-15850 The NAS shall coordinate requested altitude reservations with Traffic Management Coordinators affected by the reservation request.
SR-1000-15780 The NAS shall display altitude reservations.

3.6.3.2 Define Airspace

3.6.3.2.1 Establish Airspace

SR-1000-41910 The NAS shall establish airspace boundaries.
SR-1000-15480 The NAS shall establish the terminal area service volume between 500 feet above the surface and flight level 180.
SR-1000-15490 The NAS shall establish non-precision approach and landing routes with route widths 2 nmi or less between 250 feet and 3000 feet above the surface.
SR-1000-15510 The NAS shall establish non-precision approach routes that allow for a 0.6 nmi cross-track error at the missed approach point.
SR-1000-31530 The NAS shall develop airspace sectors based on the characteristics of aircraft operating in airspace volumes.

3.6.3.2.2 Minimum Safe Altitudes

SR-1000-41920 The NAS shall establish minimum safe altitudes for aircraft.
SR-1000-15360 The NAS shall establish the minimum safe altitude for flight over all areas of US delegate airspace.
SR-1000-29620 The NAS shall establish minimum en route safe altitudes.
SR-1000-29630 The NAS shall establish minimum safe altitudes in proximity to airport approach area.
SR-1000-29640 The NAS shall establish minimum safe altitudes for airport departure areas.

3.6.3.2.3 Update Airspace Information

SR-1000-41930 The NAS shall update special use airspace information.
SR-1000-09250 The NAS shall update the status of special use airspace.
SR-1000-09260 The NAS shall update the boundaries of special use airspace.
SR-1000-41940 The NAS shall update terrain and obstacle information.
SR-1000-25340 The NAS shall update information about terrain throughout the area of NAS.
SR-1000-25350 The NAS shall update information about manmade obstacles throughout the area of NAS.

SR-1000-25400 The NAS shall update terrain elevation information for the continental U.S. in grid form.
SR-1000-25440 The NAS shall update terrain elevation data.
SR-1000-25450 The NAS shall update information on all man-made obstacles that are greater than 200 feet above the surrounding terrain.

3.6.3.3 Disseminate Airspace Configurations

3.6.3.3.1 Disseminate Airspace Structure

SR-1000-41950 The NAS shall disseminate airspace structure information.
SR-1000-02830 The NAS shall display airspace structure information.
SR-1000-11380 The NAS shall disseminate ATC facility boundary data anywhere in the NAS coverage as needed to specialists at the ATCSCC.
SR-1000-14830 The NAS shall disseminate aeronautical fix information to NAS users.
SR-1000-41960 The NAS shall disseminate special use airspace information.
SR-1000-07290 The NAS shall disseminate special use airspace information at least 2 hours prior to it becoming effective.
SR-1000-08910 The NAS shall disseminate the status of special use airspace.
SR-1000-24740 The NAS shall display current special use airspace information from throughout the NAS coverage area.
SR-1000-41970 The NAS shall disseminate information regarding military aircraft activity.
SR-1000-15960 The NAS shall disseminate information regarding military aircraft activity to non-participating civil users.
SR-1000-15970 The NAS shall disseminate information regarding military aircraft activity to non-participating military users.
SR-1000-41980 The NAS shall disseminate schedules for airspace usage.
SR-1000-16330 The NAS shall notify users of the schedules for airspace usage.
SR-1000-16340 The NAS shall notify specialists of the schedules for airspace usage.

3.6.3.3.2 Disseminate Navigation Reference Information

SR-1000-14090 The NAS shall disseminate the geodetic location of navigational reference point using a FAA approved datum.
SR-1000-16720 The NAS shall disseminate bearing information for ground-based navigational aids.
SR-1000-16700 The NAS shall disseminate geographical reference information for ground-based navigational aids.
SR-1000-16710 The NAS shall disseminate identification information for ground-based navigational aids.

3.6.3.3.3 Disseminate Terrain and Obstacle Information

SR-1000-02820 The NAS shall display geographic information.
SR-1000-02840 The NAS shall display current terrain information from throughout the NAS coverage area.

SR-1000-02850 The NAS shall display terrain information that includes terrain elevation from throughout the NAS.
SR-1000-24780 The NAS shall display terrain information that includes landmark information from throughout the NAS airspace.

SR-1000-41990 The NAS shall disseminate terrain and obstacle information.
SR-1000-15330 The NAS shall disseminate complete information on terrain elevation.
SR-1000-42000 The NAS shall disseminate terrain and obstacle information to users.
SR-1000-03900 The NAS shall disseminate terrain information to users upon request.
SR-1000-03940 The NAS shall disseminate manmade obstacle information to users upon request.
SR-1000-42010 The NAS shall disseminate terrain and obstacle information to specialists.
SR-1000-03970 The NAS shall disseminate terrain information to specialists upon request.
SR-1000-03990 The NAS shall disseminate manmade obstacle information to specialists upon request.
SR-1000-25630 The NAS shall disseminate manmade obstacle information to specialists.
SR-1000-25635 The NAS shall disseminate the minimum altitude required to clear the manmade obstacle.
SR-1000-04060 The NAS shall disseminate terrain information in a visual format to specialists including the minimum altitude required to clear terrain.
SR-1000-42020 The NAS shall filter terrain and obstacle information based on user selected parameters.
SR-1000-04030 The NAS shall filter terrain information based on route of flight.
SR-1000-42030 The NAS shall filter terrain information based on selected geographic areas.
SR-1000-04040 The NAS shall filter manmade obstacle information based on route of flight.
SR-1000-04020 The NAS shall filter manmade obstacle information based on selected geographic areas.
SR-1000-42040 The NAS shall disseminate filtered terrain and obstacle information.
SR-1000-25560 The NAS shall disseminate filtered terrain information to users.
SR-1000-25580 The NAS shall disseminate filtered manmade obstacle information to users.
SR-1000-25590 The NAS shall disseminate filtered terrain information to specialists.
SR-1000-25610 The NAS shall disseminate filtered manmade obstacle information to specialists.
SR-1000-42050 The NAS shall display obstacle information.
SR-1000-24750 The NAS shall display current obstacle information from throughout the NAS coverage area.
SR-1000-24790 The NAS shall display information about obstacles that affect minimum IFR vectoring altitudes.
SR-1000-02860 The NAS shall display information about obstacles that constitute a hazard to aviation.

3.6.3.3.4 Airport Information

SR-1000-24800 The NAS shall disseminate landing area outlines to specialists.
SR-1000-24810 The NAS shall disseminate taxiway area outlines to specialists.
SR-1000-24820 The NAS shall disseminate runway area outlines to specialists.
SR-1000-19450 The NAS shall exchange airport utilization data with users.

4 Support Requirements

4.1 Infrastructure Requirements

4.1.1 Operating Environment

SR-1000-04640 The NAS shall establish independent surveillance environments covering all surface movement areas of aerodromes.
SR-1000-19100 The NAS shall locate unmanned sites to achieve maximum effectiveness of installed equipment.
SR-1000-15470 The NAS shall establish the location of each navigational reference point in latitude and longitude coordinates.
SR-1000-18000 The NAS shall control equipment remotely.
SR-1000-21500 The NAS shall provide contingency plans for ARTCC's in the event of catastrophic failure.
SR-1000-15370 The NAS shall ensure ATC specialist has an unobstructed 360-degree view of the airport movement area from the Tower Cab.
SR-1000-21350 The NAS shall comply with all Occupational Safety and Health Administration (OSHA), FAA, and local safety and sanitary regulations.

SR-1000-19040 The NAS shall maintain facilities in accordance with applicable FAA and local standards.
SR-1000-42120 The NAS shall design manned facilities in accordance with OSHA standards.
SR-1000-42130 The NAS shall design unmanned facilities in accordance with appropriate standards.
SR-1000-42140 The NAS shall design facilities to applicable FAA and local standards.
SR-1000-42150 The NAS shall design manned facilities in accordance with human factors design standards.
SR-1000-42160 The NAS shall provide facilities with adequate working conditions for personnel.
SR-1000-23040 The NAS shall design unmanned facilities to provide an adequate work environment.

4.1.2 Communications

SR-1000-16630 The NAS shall exchange data between FAA and DoD air traffic control facilities.
SR-1000-19910 The NAS shall provide air-ground communications within the NAS.
SR-1000-42170 The NAS shall provide VHF channels for air-ground communications.
SR-1000-42180 The NAS shall provide UHF channels for air-ground communications.
SR-1000-42190 The NAS shall provide HF channels for air-ground communications.
SR-1000-20340 The NAS shall configure communications to support changes in operating position responsibilities.
SR-1000-20800 The NAS shall reconfigure communication capabilities to support changes in operating conditions.
SR-1000-32120 The NAS shall provide configurable communications.

SR-1000-42200 The NAS shall provide ground-to-ground communications.
SR-1000-42210 The NAS shall provide inter-facility communications.
SR-1000-42220 The NAS shall provide intra-facility communications.
SR-1000-20690 The NAS shall provide specialists with indirect-access communications.
SR-1000-20680 The NAS shall provide direct-access communications.
SR-1000-20610 The NAS shall establish secure voice communications between NAS facilities and DoD facilities.
SR-1000-42240 The NAS shall establish secure data communications between NAS facilities and DoD facilities.
SR-1000-32110 The NAS shall store communications.
SR-1000-20240 The NAS shall record air-ground voice and data communications.
SR-1000-20250 The NAS shall retain recordings of air-ground voice transmissions for not less than 15 days.
SR-1000-20260 The NAS shall retain recordings of air-ground data messages for not less than 15 days. (Verify 15 or 30 days)
SR-1000-42250 The NAS shall record ground-to-ground voice and data communications.
SR-1000-20250 The NAS shall retain recordings of ground-to-ground voice transmissions for not less than 15 days.
SR-1000-20260 The NAS shall retain recordings of ground-to-ground data messages for not less than 15 days.
SR-1000-42260 The NAS shall timestamp all recorded communications.
SR-1000-42270 The NAS shall retrieve stored communications.
SR-1000-20890 The NAS shall retrieve individual voice recordings within 30 minutes of a request.
SR-1000-20270 The NAS shall retrieve air-ground communications from “online” storage within 30 minutes of a request by authorized NAS personnel.
SR-1000-42280 The NAS shall retrieve air-ground communications from “off-line” storage within 60 minutes of a request by authorized NAS personnel.

SR-1000-20900 The NAS shall retrieve individual data messages.
SR-1000-20280 The NAS shall retrieve individual air-ground data messages from "off-line" storage within 5 minutes of a request by authorized NAS personnel.
SR-1000-42290 The NAS shall establish emergency communications.
SR-1000-20980 The NAS shall establish an emergency communications network protected from nuclear, high-altitude electromagnetic pulse (HEMP).
SR-1000-13540 The NAS shall establish emergency communications compatible with the military.
SR-1000-13550 The NAS shall establish emergency communications compatible with homeland security.
SR-1000-13610 The NAS shall establish emergency communications compatible with local officials.

4.1.3 Training

SR-1000-32440 The NAS shall train maintenance specialists.
SR-1000-42300 The NAS shall train specialists.

SR-1000-42310 The NAS shall provide resources for training programs.
SR-1000-42320 The NAS shall provide facilities for training programs.
SR-1000-42330 The NAS shall provide equipment for training programs.
SR-1000-42340 The NAS shall provide materials for training programs.
SR-1000-42350 The NAS shall provide methods for training programs.

4.1.4 Testing and Evaluation

SR-1000-21150 The NAS shall establish a test and evaluation program for new systems introduced into the NAS.
SR-1000-42360 The NAS shall participate in PAT&E for new systems introduced into the NAS.
SR-1000-42370 The NAS shall participate in FAT of new systems introduced into the NAS.
SR-1000-42380 The NAS shall participate in DT&E for new systems introduced into the NAS.
SR-1000-42390 The NAS shall conduct OT&E for new systems introduced into the NAS.
SR-1000-42400 The NAS shall establish a facility for conducting OT&E.
SR-1000-42410 The NAS shall establish a Quality Assurance program for new systems introduced into the NAS.
SR-1000-21240 The NAS shall validate new or modified equipment or computer software for use in an operational environment.
SR-1000-42420 The NAS shall certify new systems for operational use.

4.1.5 Logistics

SR-1000-42430 The NAS shall establish logistics support for all NAS systems.
SR-1000-18860 The NAS shall acquire replacement parts for NAS equipment.
SR-1000-22930 The NAS shall establish depot facilities to perform logistics activities.
SR-1000-42440 The NAS shall perform equipment repairs at depot facilities.
SR-1000-22940 The NAS shall acquire equipment to perform logistics activities.
SR-1000-22950 The NAS shall acquire systems to perform logistics activities.

4.2 Security Requirements

4.2.1 Prevent disclosure of classified information

SR-1000-21890 All NAS systems shall provide recovery measures from security incidents.
SR-1000-21690 The NAS shall prevent disclosure of classified information to unauthorized persons.
SR-1000-21860 The NAS shall prevent disclosure of sensitive information to unauthorized persons.
SR-1000-21730 The NAS shall store classified information.

4.2.2 Control physical access to equipment and facilities

SR-1000-21710 The NAS shall control physical access to equipment and facilities.
SR-1000-32030 The NAS shall provide physical security to prevent damage to equipment, and facilities.
SR-1000-21700 The NAS shall provide physical security to prevent unauthorized access to equipment, and facilities.
SR-1000-21410 The NAS shall remotely monitor and control access to unmanned facilities to prevent interruption of service, unauthorized access to computers, theft, and damage to government property.
SR-1000-21340 The NAS shall control access to manned facilities to prevent interruption of service.

SR-1000-32270 The NAS shall control access to manned facilities to prevent distractions of specialists.
SR-1000-32280 The NAS shall control access to manned facilities to prevent unauthorized access to computers
SR-1000-32290 The NAS shall control access to manned facilities to prevent the theft of government property.

4.2.3 Protection of NAS systems

SR-1000-21720 The NAS shall provide security measures at facilities for protection of NAS systems.
SR-1000-21740 The NAS shall immediately notify the appropriate personnel when an attempt to violate physical security is detected.
SR-1000-20930 The NAS shall verify user authorization and limit access to computer operational programs and databases.

4.2.4 Criteria for access of clearances

SR-1000-21760 The NAS shall establish criteria for determining who shall have access or clearances to information on a need -to-know basis.
SR-1000-21800 The NAS shall deny effective use of information even if unauthorized access is gained.
SR-1000-21790 The NAS shall prevent unauthorized persons from gaining access to information systems

SR-1000-21770 The NAS shall control access to facilities and information.
SR-1000-21780 The NAS shall enforce established security rules and procedures.

4.2.5 Protect NAS assets

SR-1000-21830 The NAS shall protect NAS assets.
SR-1000-31990 The NAS shall protect assets from unauthorized modification
SR-1000-31980 The NAS shall protect assets from unauthorized deletion
SR-1000-31970 The NAS shall protect assets from unauthorized creation
SR-1000-31960 The NAS shall protect assets against false or misleading data
SR-1000-31950 The NAS shall protect assets from denial of service
SR-1000-31940 The NAS shall protect assets from unacceptable degradation of service.

4.2.6 Security rules on an entity's access attempts

SR-1000-21840 The NAS shall enforce system security rules on an entity's access attempts.
SR-1000-31880 The NAS shall restrict the release of NAS data to authorized entities.
SR-1000-31890 The NAS shall authenticate an authorized entity's identity.
SR-1000-31900 The NAS shall uniquely identify all authorized entities.
SR-1000-31910 The NAS shall deter repeated unsuccessful attempts to gain access, in accordance with system security rules.
SR-1000-31920 The NAS shall detect repeated unsuccessful attempts to gain access.

4.2.7 Implement non-repudiation

SR-1000-21870 The NAS shall implement non-repudiation.
SR-1000-31840 The NAS shall alert specialists when malicious activity is detected.
SR-1000-31860 The NAS shall detect malicious activity.
SR-1000-21880 The NAS shall deter malicious activity.

4.2.8 Provide the required level of security and necessary training

SR-1000-21820 The NAS shall provide the required level of security and necessary training for all NAS systems based upon risk analyses, and threat and vulnerability assessments.
SR-1000-32180 The NAS shall implement technical security management.
SR-1000-32190 The NAS shall protect access to assets during all operational states.
SR-1000-32200 The NAS shall enforce system security rules during all operational states.

4.2.9 Maintain security logs

SR-1000-21850 The NAS shall record the security audit log during all operational states.
SR-1000-32210 The NAS shall record all system access attempts in a security audit log.
SR-1000-32220 The NAS shall preserve the security audit log for a minimum of 90 days.

SR-1000-32230 The NAS shall prevent modification of the events recorded in the security audit log.
SR-1000-32240 The NAS shall record all detected malicious activity in the security audit log.
SR-1000-32250 The NAS shall record all attempts to violate system security rules in the security audit log.
SR-1000-32260 The NAS shall record all security administration activities in the security audit log.

4.2.10 Control access to Information

SR-1000-21750 The NAS shall control access to information.
SR-1000-00930 The NAS shall prevent unauthorized modifications to flight plans.
SR-1000-32010 The NAS shall store security sensitive information.
SR-1000-20640 The NAS shall provide physical security to protect classified information. SR-1000-20650 The NAS shall secure unclassified voice communication.
SR-1000-46500 The NAS shall secure unclassified data communication.
SR-1000-20620 The NAS shall encrypt classified information data transmission from selected NAS facilities to DoD facilities.
SR-1000-46510The NAS shall decrypt classified information data transmissions from DoD facilities to selected NAS facilities.
SR-1000-32170 The NAS shall provide physical security to prevent corruption of data.

4.2.11 Implement security audit review mechanisms

SR-1000-32150 The NAS shall implement security audit review mechanisms.

4.2.12 Segregate interface equipment

SR-1000-20630 The NAS shall segregate interface equipment for encrypting data communications to computer equipment performing air traffic control functions.
SR-1000-32160 The NAS shall segregate interface equipment for storing classified information to computer equipment performing air traffic control functions.

4.3 Performance Requirements

SR-1000-46520 The NAS shall comply with the response times in Table 4-1

NAS Response Times (seconds)			
Function	**Mean**	**99%**	**Maximum**
Plan Flights			
Validating Proposed Flight Plans and Amendments	4.0	6.0	12.0
Validating Active Flight Plan Amendments	0.6	1.2	3.0
Validating Flight Plan Actions	1.5	3.0	6.0
Monitor Flights			
Current Aircraft Position, Altitude, Speed and Trajectory Request	3.0	5.0	10.0
Future Aircraft Position, Altitude, Speed and Trajectory Request	3.0	5.0	10.0
Alerts for Aircraft not Associated with Flight Plan	0.6	1.2	3.0
Control Traffic			
Sequencing and Spacing Advisory Request	0.6	1.2	3.0
Amended Flight Plan Conflict Detection	1.5	3.0	6.0
Predicted Imminent Collision Notification	0.6	1.2	3.0
Recommended Avoidance Maneuver Display	0.6	1.2	3.0
Support Flight Operations			
Weather Information Request	3.0	5.0	10.0
Hazardous Weather Information for 100 NM Area Request	1.5	3.0	6.0
Hazardous Weather Information for Continental US Request	3.0	5.0	10.0
Monitor NAS Operations			
Capacity and Demand Projections Request	3.0	5.0	10.0
Aeronautical Information Request	3.0	5.0	10.0
Plan NAS Usage			
Flow Control and Delay Advisory Information Request	3.0	5.0	10.0

Table 4-1 NAS Response Times

4.3.1 Plan Flights

SR-1000-16100 The NAS shall approve special use airspace reservations within 30 minutes of initial receipt of request.

4.3.2 Monitor Flights

4.3.2.1 Collect Position Information

SR-1000-17320 The NAS shall detect aircraft entering an ADIZ within 13 seconds.
SR-1000-17340 The NAS shall detect aircraft entering an ADIZ up to and including an altitude of 100,000 feet above MSL, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.

SR-1000-17360 The NAS shall detect aircraft entering an ADIZ up to and including surface ranges of 250 nmi, from ground level to +30 degrees relative to an earth tangential plane at the sensor site.
SR-1000-24070 The NAS shall detect aircraft position to within 2.04 nmi (99th percentile) of the actual position over the ground for en route aircraft.
SR-1000-24090 The NAS shall detect the position of aircraft in terminal environments with an accuracy of 0.28 nmi (99th percentile).
SR-1000-24670 The NAS shall process en route area surveillance data within a maximum 3.0 seconds of its detection by the NAS.
SR-1000-04340 The NAS shall monitor non-participating aircraft that are within 5 NM lateral, and 500 feet vertical of Special Use Airspace.
SR-1000-17580 The NAS shall determine the altitude of aircraft entering an ADIZ within 5000 feet of actual pressure altitude.
SR-1000-02180 The NAS shall determine the altitude of controlled aircraft in terminal airspace to within 103 feet (68^{th} percentile) of the actual pressure altitude.
SR-1000-90011 The NAS shall determine the altitude of controlled aircraft in en route airspace to within 103 feet (68^{th} percentile) of the actual pressure altitude.
SR-1000-24200 The NAS shall acquire the reported altitude for each controlled aircraft inside US delegated airspace to within 103 feet (68th percentile) of their actual pressure altitude.
SR-1000-17510 The NAS shall detect position of aircraft operating within an ADIZ with an accuracy of 0.176 degrees azimuth.
1000-17500 The NAS shall detect the position of aircraft operating within an ADIZ with an accuracy of 0.125 NM.

4.3.2.2 Determine Trajectory

SR-1000-17540 The NAS shall detect the ground speed of aircraft entering an ADIZ within 20 knots (99^{th} percentile) of its actual ground speed.
SR-1000-17640 The NAS shall correlate flight plans of known inbound aircraft with aircraft penetrating an ADIZ within a maximum of 8 seconds of initial detection.
SR-1000-02150 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 60 knots of the actual ground speed during aircraft acceleration in level flight.
SR-1000-01800 The NAS shall detect the ground speed of each controlled aircraft in terminal areas to within 10 knots (peak RMS value) of the aircraft's true actual ground speed during straight-line-and-level flight at constant speed.
SR-1000-01810 The NAS shall detect the ground speed of each controlled aircraft in terminal areas to within 30 knots (peak RMS value) of its actual ground speed during aircraft acceleration in level flight.
SR-1000-02140 The NAS shall determine the ground speed of each controlled aircraft in US delegated airspace to within 20 knots (peak RMS value) of the aircraft's actual ground speed during straight-line-and-level.
SR-1000-02190 The NAS shall detect aircraft track accurate to within 5 degrees (99th percentile) of actual course.
SR-1000-17550 The NAS shall determine the course of aircraft entering an ADIZ within 5 degrees (99^{th} percentile) of actual course.SR-1000-24900 The NAS shall project each aircraft's flight path at least every 13 seconds.

SR-1000-12130 The NAS shall update stored flight information within 12.0 seconds of receiving new flight information.

4.3.2.3 Monitor Aircraft Status

SR-1000-02220 The NAS shall update the position of aircraft in NAS controlled airspace with a maximum time between updates of 13 seconds.
SR-1000-03000 The NAS shall update each aircraft's flight path at least every 13 seconds.

4.3.2.4 Disseminate Aircraft Status

SR-1000-02680 The NAS shall display terminal area surveillance data to specialists within a maximum of 2.2 seconds of its detection.
SR-1000-02690 The NAS shall display en route area surveillance data to specialists within a maximum 3.0 seconds of its detection.
SR-1000-03300 The NAS shall display identification information received from aircraft in remote areas within 15 seconds of receipt.
SR-1000-25060 The NAS shall display position reports received from aircraft in remote areas within 15 seconds of receipt.
SR-1000-02130 The NAS shall display the position of aircraft in terminal environments with an accuracy of 0.28 nmi (99th percentile).
SR-1000-11020 The NAS shall disseminate horizontal position information to with an accuracy of 2.04 (99th percentile) NM or less for target ranges greater than 100 NMI of the primary surveillance source.
SR-1000-11030 The NAS shall disseminate horizontal position information with accuracy of 1.0 (99th percentile) NM or less for target ranges less than 100 NMI of the primary surveillance source.
SR-1000-11040 The NAS shall disseminate requested aircraft track with accuracy of 5 degrees or less for aircraft in straight-line flight.
SR-1000-11050 The NAS shall disseminate requested aircraft speed with accuracy of 20 knots or less for an aircraft in constant straight-line flight.

4.3.3 Control Traffic

SR-1000-42010 The NAS shall alert specialists at least 5 nautical miles before the violation of separation with Special Use Airspace.
SR-1000-22360 The NAS shall predict a violation of separation standards with Special Use Airspace no less than 80 seconds before the violation occurs.
SR-1000-19740 The NAS shall alert specialists at least 80 seconds before the violation of separation occurs with Special Use Airspace.
SR-1000-03030 The NAS shall alert specialists of predicted violations of aircraft separation standards in en route airspace at least 80 seconds prior to the violation.

SR-1000-04500 The NAS shall alert specialists of predicted aircraft-to-aircraft separation violations by participating aircraft within close proximity to special use airspace within 80 seconds of the actual violation.

SR-1000-03040 The NAS shall alert specialists of predicted violations of aircraft separation standards in terminal areas at least 30 seconds prior to the violation.

SR-1000-03660 The NAS shall alert appropriately equipped users to the collision danger within 10 seconds after the prediction is made.

SR-1000-42060 The NAS shall alert appropriate specialists of predicted separation standards violations in terminal airspace at least 40 seconds in advance of the actual violation of separation standards.

SR-1000-25890 The NAS shall alert appropriate specialists of predicted aircraft-terrain separation standards violations in terminal airspace at least 40 seconds in advance of the actual violation of separation standards.

SR-1000-25900 The NAS shall alert appropriate specialists of predicted aircraft-obstacle separation standards violations in terminal airspace at least 40 seconds in advance of the actual violation of separation standards.

SR-1000-42070 The NAS shall alert appropriate specialists of predicted separation standards violations in en route airspace at least 75 seconds in advance of the actual violation of separation standards.

SR-1000-25920 The NAS shall alert appropriate specialists of predicted aircraft- terrain separation standards violations in en route airspace at least 75 seconds in advance of the actual violation of separation standards.

SR-1000-25930 The NAS shall alert appropriate specialists of predicted aircraft-obstacle separation standards violations in en route airspace at least 75 seconds in advance of the actual violation of separation standards.

SR-1000-42080 The NAS shall alert participating aircraft to predicted conflicts within 10 seconds of prediction.

SR-1000-09170 The NAS shall alert participating aircraft to predicted conflicts with obstructions within 10 seconds of prediction.

SR-1000-09180 The NAS shall alert participating aircraft to predicted conflicts with Special Use Airspace within 10 seconds of prediction

SR-1000-09190 The NAS shall alert participating aircraft to predicted conflicts with other aircraft within 10 seconds of prediction.

SR-1000-42090 The NAS shall alert users of predicted separation standards violations in terminal airspace at least 30 seconds in advance of the actual violation.

SR-1000-26070 The NAS shall alert users of predicted aircraft- terrain separation standards violations in terminal airspace at least 30 seconds in advance of the actual violation.

SR-1000-26080 The NAS shall alert users of predicted aircraft-obstacle separation standards violations in terminal airspace at least 30 seconds in advance of the actual violation.

SR-1000-42100 The NAS shall alert users of predicted separation standards violations in en route airspace at least 65 seconds in advance of the actual violation of separation standards.

SR-1000-26100 The NAS shall alert users of predicted aircraft-terrain separation standards violations in en route airspace at least 65 seconds in advance of the actual violation of separation standards.

SR-1000-26110 The NAS shall alert users of predicted aircraft-obstacle separation standards violations in en route airspace at least 65 seconds in advance of the actual violation of separation standards.

SR-1000-42110 The NAS shall disseminate recommended collision avoidance maneuver to specialists, within 5 seconds of a predicted collision.

SR-1000-26220 The NAS shall disseminate recommended collision avoidance maneuvers to specialists within 5 seconds of a predicted aircraft-terrain collision.

SR-1000-26230 The NAS shall disseminate recommended collision avoidance maneuvers to specialists within 5 second of a predicted aircraft-obstacle collision.

SR-1000-02010 The NAS shall disseminate to users non-adherence to ATC clearance within 10 seconds of the detection of the deviation.

4.3.4 Support Flight Operations

SR-1000-06920 The NAS shall update hazardous weather information within 2 minutes of receipt.
SR-1000-06040 The NAS shall update storm cell predictions every 5 minutes for flight planning.
SR-1000-07000 The NAS shall update Terminal area hazardous flight planning weather information within one minute of receiving an update.
SR-1000-06930 The NAS shall update national hazardous flight planning weather information within 30 minutes.
SR-1000-05460 The NAS shall update en route weather conditions aloft every 5 minutes for flight planning.
SR-1000-09400 The NAS shall update hazardous weather advisory broadcasts at least once every 30 minutes.
SR-1000-09410 The NAS shall update hazardous weather advisory broadcasts within 5 minutes of a significant change.
SR-1000-06950 The NAS shall disseminate Terminal area hazardous weather information to specialists within 1 minute of detection.

4.3.5 Monitor NAS Operations

SR-1000-17110 The NAS shall alert users to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.
SR-1000-17120 The NAS shall alert specialists to a navigation system failure affecting NAS operations within 10 seconds of the detected failure.
SR-1000-17070 The NAS shall terminate operation of navigation systems operating outside of allowable tolerances within 10 seconds of detection.
SR-1000-17080 The NAS shall terminate operation of navigation aids operating outside of allowable tolerances within 10 seconds of detection.
SR-1000-21660 The NAS shall implement the backup operational plan within two minutes of an ARTCC failure.
SR-1000-21650 The NAS shall provide automatic track initiation and flight plan association in the backup facility within 60 seconds of an ARTCC failure.

4.3.6 Plan NAS Usage

SR-1000-02880 The NAS shall display geographical structure information to within .26 nmi (99th percentile) of its actual position.
SR-1000-24840 The NAS shall display airspace structure information to within .26 nmi (99th percentile) of its actual position.
SR-1000-04800 The NAS shall use map outlines of runways that are accurate to within 12 feet of the actual edges of the runways.
SR-1000-04810 The NAS shall use map outlines of taxiways that are accurate to within 12 feet of the actual edges of the taxiways.

4.4 Spectrum Management

4.4.1 Secure spectrum for the FAA

SR-1000-32470 The NAS shall secure and protect national radio spectrum for the FAA and the US Aviation community.
SR-1000-19190 The NAS shall coordinate national spectrum allocation programs.
SR-1000-19290 The NAS shall establish new systems spectrum development activities compatible with projected national use.

4.4.2 Secure frequency for the FAA

SR-1000-19270 The NAS shall establish new systems frequency development activities compatible with projected national use.
SR-1000-19230 The NAS shall establish new systems frequency development activities compatible with current national use.
SR-1000-19170 The NAS shall establish national frequency allocation programs.

4.4.3 Secure spectrum

SR-1000-19310 The NAS shall comply with national standards to avoid the interference of new systems with existing systems.
SR-1000-19250 The NAS shall establish new systems spectrum development activities compatible with current national use.
SR-1000-19210 The NAS shall coordinate national spectrum management assistance programs.

4.4.4 Manage international spectrum

SR-1000-32090 The NAS shall comply with international standards to avoid the interference of new systems with existing systems.
SR-1000-19220 The NAS shall establish international management assistance programs.
SR-1000-19260 The NAS shall establish new systems spectrum development activities compatible with current international use.
SR-1000-19300 The NAS shall establish new systems spectrum development activities compatible with projected international use.

4.4.5 Manage international frequency

SR-1000-19180 The NAS shall coordinate international frequency allocation programs.
SR-1000-19280 The NAS shall establish new systems frequency development activities compatible with projected international use.
SR-1000-19240 The NAS shall establish new systems frequency development activities compatible with current international use.
SR-1000-19200 The NAS shall coordinate international spectrum allocation programs.

4.5 Reliability, Maintainability, and Availability

This section identifies the NAS level RMA requirements. FAA RMA Handbook – 006A allocates the RMA requirements to the Services and Capabilities which are supported by one or more strings of systems called Service Threads. Service Threads bridge the gap between un-allocated functional requirements and the specifications for systems that support them.

4.5.1 Availability Requirements

4.5.1.1 NAS Capability Availability

SR-1000-42470 Critical NAS Capabilities shall have n availability equal to or greater than to .99999.
SR-1000-42480 Essential NAS Capabilities shall have availability equal to or greater than to .999.
SR-1000-42490 Routine NAS Capabilities shall have availability equal to or greater than to .99.

4.5.1.2 Service Thread Availability

SR-1000-42500 Service threads supporting a Critical Capability shall have availability equal to or greater than .99999.
SR-1000-42510 Essential Service threads shall have availability equal to or greater than .9999.
SR-1000-42520 Critical Service threads shall have availability equal to or greater than .99999
SR-1000-42530 Routine Service threads shall have availability equal to or greater than .99.

SR-1000-42550 Service threads shall have availability equal to or greater than to the availability of the supported NAS Capabilities.

SR-1000-42540 The NAS shall allow selection between independent service threads supporting critical capabilities.

4.5.2 Maintainability Requirements

SR-1000-22900 The NAS shall restore critical services within 6 seconds of failure.
SR-1000-22910 The NAS shall restore essential services within 10 minutes of failure.
SR-1000-22920 The NAS shall restore routine services within 1.68 hours of failure.

SR-1000-42670 The Mean Time to Restore (MTTR) for service thread components shall be less than or equal to 0.5 hours.

4.5.3 Reliability Requirements

SR-1000-42700 The MTBF for service threads with automatic recovery requirements and whose recovery time is less than the Automatic Recovery Time shall be equal to or greater than 300 hours.
SR-1000-42710 The MTBF for service threads with automatic recovery requirements and whose recovery time is greater or equal to the Automatic Recovery Time shall be equal to or greater than 50,000 hours.

SR-1000-42720 The MTBF for service threads that have no automatic recovery requirement shall be equal to or greater than 5,000 hours.

Appendix A: Glossary

Term	Definition
A	
Advisory	Advice and information provided to assist pilots in the safe conduct of flight and aircraft movement.
Actual Ground Speed	The speed at which an aircraft moves over the geography of the earth. Actual ground speed is used in determining the accuracy of the estimated ground speed displayed to controllers.
Aerodromes	A defined area on land or water (including any buildings, installations, and equipment) intended to be used either wholly or in part for the arrival, departure, and movement of aircraft. Aerodromes may include airports, heliports, and other landing areas.
Aerodrome/Airport Acceptance Rates	The designated arrival capacity of an airport.
Aerodrome Surface	That part of the aerodrome dealing specifically with vehicles operating on the surface of the airport.
Aeronautical Information	The establishment, condition, or change in an component of the NAS; boundaries and time of restriction for special use airspace, preferred, fuel-efficient, and/or low altitude routes, traffic management information, and alternate routing to avoid conditions precluding original route availability.
Aircraft	Devise(s) that are used or intended to be used for flight in the air; when used in air traffic control terminology may include the flight crew.
Aircraft Identification	The words, letter(s), and numerals (or combination thereof) which uniquely identify an aircraft, e.g., Air Force 0, NIZ34Y, United 340, T5678.
Air Defense Identification Zone/ADIZ	The area of airspace over land or water, extending upward from the surface, within which the ready identification, the location, and the control of aircraft are required in the interest of national security.
Air Traffic	Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.
Airborne User	A general term that includes the passengers, pilot(s), and the aircraft.
Airport	An area on land or water that is used or intended to be used for the landing and takeoff of aircraft, including its buildings and facilities, if any.
Airport Movement Area	Airport area controlled by the tower or to transit the Class D airspace.
Airspace Designs	Airspace designs include: - the existing design - current and projected traffic usage - radio frequency congestion - guidelines for establishing classes of airspace

Term	Definition
	- designation of volumes of airspace to provide separation (sectors, special use, etc.) - waypoints - published routes etc. - identification of those structures, which require rulemaking, publication, environmental evaluations, etc - criteria to support the design process - objectives to meet demand, performance criteria
Airway/Route Usage	The procedure or conduct of a control area or portion thereof established in the form of a corridor, the centerline of which is defined by navigational aids.
Airport Traffic Control Tower/ATCT	A terminal facility that uses air-ground radio communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area. Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the airport traffic area regardless of flight plan or weather conditions (IFR or VFR). A tower may also provide approach control services.
Air Route Traffic Control Center/ARTCC	A facility established to provide air traffic control service to aircraft principally during the en route phase or flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
Air Traffic	Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.
Air Traffic Control System Command Center/ATCSCC	An air traffic service facility consisting of four operational units. 1. *Central Flow Control Function/CFCF* - Responsible for coordination and approval of all major intercenter flow control restrictions on a system basis in order to obtain maximum utilization of the airspace. 2. *Central Altitude Reservation Function/CARF* - Responsible for coordinating, planning, and approving special user requirements under the Altitude Reservation (ALTRV) concept. 3. Airport Reservation Office/ARO - Responsible for approving IFR flights at designated high-density-traffic airports (John F. Kennedy, LaGuardia, O'Hare, and Washington National) 4. ATC Contingency Command Post - A facility that enables the FAA to manage the ATC system when significant portions of the system's capabilities have been lost or are threatened.
Altitude	The height of a level, point, or object measured in feet above ground level (AGL) or from mean sea level (MSL). 1. *AGL Altitude* - Altitude expressed in feet measured above ground level. 2. *MSL Altitude* - Altitude expressed in feet measured

Term	Definition
	from mean sea level. 3. *Indicated Altitude* - The altitude as shown by the altimeter. On a pressure or barometric altimeter it is altitude as shown uncorrected for instrument error and uncompensated for variation from standard atmospheric conditions.
Altitude Reservation/ALTRV	Airspace utilization under prescribed conditions.
Area Forecast Weather	A prediction of the future state of the atmosphere with specific reference to one or more associated meteorological elements of a particular location.
Area of NAS Responsibility	A volume of airspace designated for control by the United States. It includes domestic and oceanic airspace for which the US is responsible for providing air traffic services.
ATCSCC Specialist	Traffic management specialist resident at the Air Traffic Control System Command Center (ATCSCC) who coordinates with local traffic management specialists at ARTCCs and manages flow control operations. See ATCSCC description.
Audit	A set of processes by which records of information systems security relevant events are kept and maintained by information processing systems. This allows for the periodic or on-demand review of security relevant events such as network communications logs, logon records, and file integrity check events.
Availability	The probability that a system or constituent piece may be operational during any randomly selected instant of time or, alternatively, the fraction of the total available operating time that the systems or constituent piece is operational. A fraction whose numerator is the Mean Time Between Failures (MTBF) and whose denominator is the sum of the MTBF plus the Mean Time To Restore (MTTR) a service.
Azimuth	The angular distance measured on a horizontal circle in a clockwise direction from either north or south.
B	
Bearing	The horizontal direction to or from any point, usually measured clockwise from true north, magnetic north, or some other reference point, through 360 degrees.
C	
Capacity Projections	Information pertinent to capacity projections includes: - sector area current weather and forecast weather - navigation equipment operational status - aerodrome operational status - runway configuration - aircraft performance characteristics
Catastrophic Failure	The inability of an ATC facility to perform its operational responsibilities, regardless of cause, as determined by operational

Term	Definition
	authorities.
Classified Information	Official information, including foreign classified information, which has been designated as requiring protection in the interest of national security.
Clearance-based Trajectory	A projection of the flight path of an aircraft that is partly based on information from the aircraft's flight plan, especially, that portion of the flight plan for which the aircraft has received clearance.
Conformance	Techniques in applying or complying with the rules
Conflict	The recognition of the predicated loss of separation minima.
Controlled Airspace	*Controlled airspace* means an airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification. (14 CFR Part 1) Note: Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.
Coordinates	The intersection of lines of reference, usually expressed in degrees/minutes/seconds of latitude and longitude, used to determine position or location.
Corrective Maintenance	Maintenance actions performed, as a result of failure, to restore an item to a specified condition.
Course	1. The intended direction of flight in the horizontal plane measured in degrees from north. 2. The ILS localizer signal pattern usually specified as from course or back course.
Critical Service	Loss of this Service would raise the risk associated with providing safe and efficient NAS operations to an unacceptable level.
D	
Demand Projections	Information pertinent to demand projections includes: - stored flight plan information - filed flight plan information - aerodrome operational status - historic demand profiles - scheduled special events - military operations
Dependent Surveillance Environment	The environment in which aircraft position information is detected via means reliant on the aircraft
Designated Hazardous Areas	Designated hazardous areas are: - Long Island Sound Reporting Service - Block Island Reporting Service - Cape Cod and Islands Radar Overwater - Lake Reporting Service - Everglades Reporting Service
Deviations	1. A departure from a current clearance, such as an off-course maneuver to avoid weather or turbulence.

Term	Definition
	2. Where specifically authorized in the FARs and requested by the pilot, ATC may permit pilots to deviate from certain regulations.
E	
Efficient	Competent, capable, that which is suitable to satisfy the requirements.
Emergency	A safety condition of being threatened by serious and/or imminent danger that requires immediate or timely assistance.
Emergency Alert Information (overdue aircraft)	Emergency Alert Information on overdue aircraft includes: - Type of emergency - Aircraft identification - Aircraft type and description - Destination - Aircraft endurance (from flight plan) - Last known/recorded position - Last recorded heading - Number and identification (if available) of passengers - Information contained on the original/amended filed flight plan - Weather conditions projected along last reported heading or along flight path - Other remarks deemed pertinent by the specialist
Emergency Locator Transmitter/ELT	A radio transmitter attached to the aircraft structure that operates from its own power source on 120.5 MHz and 243.0 MHz. It aids in locating downed aircraft by radiating a downward sweeping audio tone, 2-4 times per second. It is designed to function without human action after an accident.
En Route	One of the three phases of flight services. En route service is provided outside of terminal airspace and is exclusive of oceanic control.
Equipment	Hardware, software, or systems tools and/or apparatus
Essential Information	That data or information that is pertinent to facilitate an action.
Essential Information (overdue aircraft)	Essential Information on overdue aircraft includes: - Information contained on the original and any amendments to the filed flight plan - Last recorded or last known position - Last recorded heading - Weather conditions in area of last recorded or last known position - Weather conditions projected along last reported heading or along predicted flight path
Essential Service	Loss of this Service would significantly raise the risk associated with providing safe and efficient NAS operations.
F	

Term	Definition
Failure	The event, or inoperable state, in which any item or part of an item does not, or would not, performs as previously specified.
Fix	A geographical position that is determined by visual reference to the surface, by reference to one or more radio NAVAIDs, by celestial plotting, or by another navigational device.
Flight Following	The controller monitors the progress of a flight whose navigation is being provided by the pilot. The system will correlate the aircraft position with the proposed flight plan. Flight Following may be accomplished either through procedural methods or surveillance assistance.
Flight Information	Information including the aircraft identification/call sign, aircraft type, current and projected location (position), altitude of aircraft, clearance limit, speed of aircraft, track for each controlled aircraft in controlled airspace, track for each controlled aircraft expected to enter controlled airspace (e.g. terminal, En Route, oceanic), and the ETA at reported fixes.
Flight Information (expanded)	Flight Information is: aircraft identification current position altitude speed heading vertical velocity horizontal acceleration vertical acceleration Actual or reported altitude Assigned altitude Source of altitude information Aircraft velocity Aircraft type Altitude conformance Handoff status Track status Ground speed Beacon code Computer identification number Conflict resolution advisory Heavy jet indicator Remarks Alert special aircraft status Conflict alert Minimum safe altitude warning Conflict probe violation Failure of attempted data transmission indication
Flight Level /FL	A pressure altitude convention used at or above 18,000 feet MSL

Term	Definition
	whereby all aircraft altimeters must be set to 29.92 inches of mercury. Flight level is specified in three digits that represent hundreds of feet. For example, Flight level 250 represents a barometric altimeter indication of 25,000 feet.
Flight Path	A line, course or track along which an aircraft is flying or intended to be flown.
Flight Path Projection	Flight path projection is based on: - Current position - Course - Speed - Altitude - Vertical velocity - Vertical and horizontal acceleration including turn rate
Flight Plan	Specified information relating to the intended flight of an aircraft that is filed orally or in writing with an ATC facility. *(From Current NAS SR)*
Flight Plan Information	- Aircraft Call Sign - Aircraft Type - Aircraft Position - Aircraft Altitude - Direction of Flight - Aircraft Velocity - Beacon code - Departure point - Destination - Altitude - Route of flights - Times relative to the movement of the flight - Clearance limit - ETA at reported fixes - Holding information - Approach information - Fixes - Handoff indicator - Vector information - Scratch pad - Remarks
Flow Control	Measures designed to adjust the flow of traffic into a given airspace, along a given route, or bound for a given airport so as to ensure the most effective utilization of the airspace.
Flow Management	The monitoring and management of traffic flows.
Forecast Weather	The predicted atmospheric conditions.
G	
Ground Speed	The speed at which an aircraft moves over the ground.'
Gust Front	The leading edge of gusty surface winds from thunderstorm

Term	Definition
	downdrafts Gust front speed and direction predictions are for periods of - 10 minutes - 20 minutes into the future.
H	
Hazardous Weather	Weather conditions that have the potential to significantly increase the likelihood of aviation accidents. Hazardous weather conditions include moderate to severe icing, moderate to severe turbulence, moderate to severe precipitation, wind shear, thunderstorms, sustained high winds near the surface, or widespread areas of low visibility.
Hazardous Weather Information	Hazardous weather information is: - Turbulence - Icing - Thunderstorms - Wind Shear - Microbursts - Sustained surface winds - Low Visibility - Heavy Precipitation - Lightning - Hail
I	
ICAO Flight Plan Information	ICAO flight plan information is defined as: - Aircraft identification - Aircraft type - Beacon code - Aircraft velocity - Departure point - Destination - Altitude - Route of flights - Times relative to the movement of the flight - Holding information - Approach information - Fixes - Handoff indicator - Vector information - Scratch pad - Remarks
Independent Service Threads	Threads composed of separate system components. Such threads may share a single power source, provided that power source is designed to minimize failures that could cause both service threads to fail. Such threads may share displays provided that

Term	Definition
	such adequate redundant displays are provided to permit the specialist to relocate to an alternate display in the event of a display failure.
Independent Surveillance Environment	The environment in which aircraft position information is detected via means not reliant on the aircraft
Information Systems	Information systems receive inputs from one or more external inputs, process that information, and prepare it for output on one or more output devices.
Intensity Levels	Intensity levels are associated with the following elements: - Precipitation - Turbulence - Icing (in flight) - Convective Activity/Thunderstorms - Low level wind shear
International Civil Aviation Organization/ICAO	A specialized agency of the United Nations whose objective is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.
Integrity	The ability of a system to provide timely warnings when the system should not be used for navigation as a result of errors or failures in the system.
J	
K	
L	
Landing Area	That part of the movement area intended for the landing and takeoff of aircraft. Types of landing areas include: - runways - helipads - grass fields - water
Law Enforcement Authorities	Law Enforcement Authorities are: - FBI - DEA - INS - State and Local Police
M	
Maintainability	A characteristic of design and installation that is expressed as the probability that an item will be retained in, or restored to a specified condition within a given period of time, when the maintenance is performed in accordance with prescribed procedures and resources.
Maintenance	All actions necessary for retaining an item in, or restoring it to, a specified condition. Types of maintenance are: 1. Corrective – Actions performed, as a result of failure,

Term	Definition
	to restore an item to a specified condition. 2. Preventive – Actions performed in an attempt to retain an item in a specified condition by providing systematic inspection, detection, and prevention of incipient failure.
Maintenance Activities	Maintenance activities include: - adjustment - diagnosis - replacement - repair - reconditioning - recertification
Mean Time Between Failure	The average time during which all parts of the system or constituent pieces perform within their specified limits, during a particular measurement interval under stated conditions.
Mean Time to Restore	The average elapsed time from initial failure to resumption of operation.
Military Operations	Military operations are: - Reservation of airspace for special use - Including both permanently dedicated areas and areas allocated temporarily to support special military missions - Permanently delegated approach control airspace - En route training, refueling, and deployment missions - Aircraft surge launch and recovery missions - Logistic support and administrative missions - Supersonic operations - Remotely piloted vehicle operations - Artillery missle operations - Other military operations requiring NAS support
Minimum Safe Altitude/MSA	The minimum altitude specified in FAR Part 97 for various aircraft operations to include altitudes depicted on approach charts which provide at least 1000 feet of obstacle clearance for emergency use within a specified distance from the navigation facility upon which a procedure is predicated.
Monitoring	Certain aeronautical advisory services made available by the NAS to airborne aircraft. Service consists of VFR flight following and the providing of various degrees of traffic and weather information to requesting pilots.
Movement Area	A facility that is normally occupied by Specialist, Technicians, or other FAA personnel for the conduct or support of NAS operations.
N	
National	The United States and its territories.
National Airspace System/NAS	The NAS as used herein describes the FAA facilities, hardware, and software that are a predominant part of the NAS infrastructure and the personnel who operate and maintain that equipment to

Term	Definition
	provide services to the user.
Nautical Mile	A unit of length used in sea and air navigation. equal to 1853.25 meters (about 6,080.2 feet).
Navigation Aid/NAVAID	Any visual or electronic device, airborne or on the surface which provides guidance information or position data to aircraft in flight.
Navigation Guidance	Information or position data to aircraft in flight.
Navigation Guidance Information	Navigation guidance Information can include: - Horizontal (azimuth) guidance - Vertical (glide slope) guidance - Distance/range - Bearing - Latitude - Longitude - Altitude - Rho/Theta coordinates referenced to the location of the navigational aid and true magnetic north respectively
Non-Participating Aircraft	An aircraft that is not receiving assistance or service from air traffic control. Alternatively, an aircraft that is not participating in the operations of special use airspace.
Non-precision approach	Standard instrument approach procedure in which no electronic glide scope is provided (VOR, TACAN, Loran C, NDB).
O	
Obstacle	An existing object, object of natural growth, or terrain at a fixed geographical location, or which may be expected at a fixed location within a prescribed area, with reference to which vertical clearance is or must be provided during flight operation.
Obstruction	An object/obstacle exceeding the obstruction standards specified by FAR Part 77, Subpart C.
P	
Participating Aircraft	An aircraft that meets the conditions for receiving some assistance or service from Air traffic control. Alternatively, an aircraft that is participating in the operations of special use airspace.
Pilot	The person(s) flying the plane.
PIREP	Pilot Reports which are categorized as “Urgent” represents a hazard or a potential hazard to flight operations. Items that may be included in this type of report are: tornadoes, severe or extreme turbulence, icing, wind shear. PIREPS categorized as “Routine” may include bird activity, cloud base/top report, visibility, braking action or general ride information as requested by another pilot.
Precision approach	Standard instrument approach procedure in which an electronic glide scope is provided (Instrument Landing System (ILS)).
Predicted	That which is expected at some future time, postulated on analysis of past experience and tests.
Preventive Maintenance	Actions performed in an attempt to retain an item, or restoring it to, specified condition.

Term	Definition
Q	
R	
Reliability	The probability that an item can perform its intended function for a specified interval under stated conditions.
Recurring Flight Plans	Canned and stereo flight plans
Remote Areas	Sparsely populated area such as mountains, swamps, and large bodies of water.
Remote Control	Control of an operation from a distance, involving a link, usually electrical, between the control device and the apparatus to be operated.
Reported Altitude	The height of a level, point, or object from Mean Sea Level (MSL.) as reported by the pilot.
Restricted Areas	Locations where aircraft operations are not absolutely prohibited but are subject to various restrictions. They are located where both airborne and ground-based activities are routinely conducted that may be hazardous to either the aircraft or its occupants. Some activities include artillery firing, aerial gunnery, and high-energy laser and missile testing.
Route	A defined path, consisting of one or more courses in horizontal plane, which aircraft traverse over the surface of the earth.
Routine Service	Loss of this Service would have a minor impact on the risk associated with providing safe and efficient NAS operations
Runway	A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to the magnetic direction.
S	
Safety	General term denoting an acceptable level of risk, relative freedom from, and low probability of harm. The associated risks that have been identified have been accepted provided that all identified controls are implemented and enforced.
Saturation	The level of air traffic at which no additional traffic may be accommodated.
Search and Rescue/SAR	A service that seeks missing aircraft and assists those found to be in need of assistance. It is a cooperative effort using the facilities services available Federal, state, and local agencies.
Secure/Security	1. Measures taken to protect the NAS from all acts designed to, or that may, impair its effectiveness. 2. A condition that results from the establishment and maintenance of measures to protect designated information, personnel, equipment, and installations. 3. A condition that prevents unauthorized disclosure of information that is safeguarded as NAS-sensitive (designated operational/administrative) or is classified in the interests of national security.
Security Incidents	Any act or circumstance that intends to harm or actually harms

Term	Definition
	NAS data or information systems, deliberate violation of FAA security policy, or actual or intended violation of U.S. law.
Separation	In air traffic control, the spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off.
Separation Assurance	This service ensures that aircraft maintain a safe distance from other aircraft, terrain, obstacles, and certain airspace not designated for routine air travel.
Separation Violation	An event in which the distance between an aircraft and either another aircraft, an obstacle, the ground, or specified airspace is less than prescribed standards.
Service Threads	Service threads are strings of systems that support one or more service/capabilities to a user/specialist.
Simultaneous Parallel Approach Runway Separation	Simultaneous parallel approach runway separation includes: - Distance between centerlines between 2500 feet and 4300 feet - 2 nmi staggered separation (i.e. combination of actual longitudinal and actual lateral with respect to approach course) -Distance between centerlines greater than 4300 feet - minimum actual lateral separation irrespective of approach course)
Special Use Airspace	Airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities.
Specialist	Any of the ground based personnel involved in supporting air traffic control. This includes controllers, supervisors, and TM specialists in the facilities and TM managers in the command center.
Speed Information	Data on an aircraft's distance traveled over a unit of time.
Surveillance	The detection, location, and tracking of aircraft within NAS airspace for the purposes of control, separation, and identification. Surveillance systems are electronic in nature; visual methods are purposely excluded. In the case of dependent surveillance, the aircraft provides all flight information. Surveillance systems are differentiated as independent, independent cooperative, and dependent; 1. Independent Surveillance - A system which requires no airborne compatible equipment 2. Independent Cooperative Surveillance - A system which requires airborne compatible equipment (e.g., ATCRBS, Mode S) 3. Dependent Surveillance - A system that requires input from navigation equipment aboard the aircraft either via a data link (e.g., LOFF) or via voice (transmission pilot reports).
Severe Weather Avoidance Plan (SWAP)	SWAPs are formalized programs that are of considerable value in areas that are particularly susceptible to severe weather. Plans that

Term	Definition
	are properly developed, coordinated, and implemented can reduce coordination and TM restrictions associated with rerouting aircraft around areas of severe weather; therefore, resulting in better utilization of available airspace. FAAO 7210.3U CHG3
T	
Tangential Plane	A planar surface tangent to a point on the geodetic surface who's normal (orthogonal line) at the point of tangency is the location of surveillance sensor. The tangential plane defines the "line-of-sight" elevation below which standard NAS surveillance sensors are incapable of detecting airborne aircraft. a planar surface tangent to a point on the geodetic surface who's normal (orthogonal line) at the point of tangency passes through the rotational axis of a radar sight. The tangential plane defines the "line-of-sight" elevation below which standard NAS radar is incapable of detecting airborne aircraft.
Terminal Areas	The airspace volume within a 40-mile radius of an airport up to and including 18,000 feet.
Traffic	A term used by ATC to refer to one or more aircraft. The term may be used by specialists to transfer radar identification of an aircraft to another specialist for the purpose of coordinating separation action. Traffic is normally issued (a) in response to a handoff or point out, (b) in anticipation of a handoff or point out, or (c) in conjunction with a request for control of an aircraft.
Traffic Advisories	Advisories issued to alert pilots to other known or observed air traffic, which may be in such proximity to the position or intended route of flight of their aircraft to warrant attention.
Traffic Count Summary Information	Traffic Count Summary Information includes: - Total number of aircraft - Aircraft IDs - Aircraft types of air carrier (general aviation and DoD/Military)
Traffic Flow Plans	Flow control preparation function and schemas of the ATCSCC and local ARTCC controllers in performing traffic flow management
Traffic Management	The function in ARTCCs and designated terminals resulting in the direct involvement and/or active management of facility traffic.
Traffic Management Coordinator	A traffic management specialist resident at the ARTCC traffic management unit (TMU) providing coordination between the national level central flow control function of the ATCSCC and local ARTCC controllers.

Term	Definition
Traffic Management Specialist	Specialist resident at the ATCSCC who coordinates between local traffic management specialists at ARTCCs and manages flow control operations.
Traffic Sequencing Advisories	Advisories issued to alert pilots to other known or observed air traffic, which may be in such proximity to the position or intended route of flight of their aircraft to warrant their attention.
Trajectory	An ordered union of all converted fixes and route segments for a Flight Plan or Trial Plan.
True Airspeed	The airspeed of an aircraft relative to undisturbed air. Used primarily in the flight planning and en route portions of flight. When used in pilot/controller communications, it is referred to as "true airspeed" and not shortened to "airspeed."
U	
Unmanned Facility	A facility that is normally not occupied by personnel for the conduct or support of NAS operations. Such facilities normally contain equipment that is operated, controlled, and monitored from a manned facility.
User	The external individual or group that receives services from the NAS (e.g., Pilot, Air Carrier, General Aviation, Military, Law Enforcement Agencies).
V	
Velocity	A vector describing the speed and direction of an aircraft.
Vector	A heading issued to an aircraft to provide navigational guidance.
W	
Warning Areas	Special Use Airspace located over international waters where operations that may be hazardous to non-participating aircraft are routinely conducted.
Weather	A category of atmospheric phenomena that includes tornadoes, funnel clouds, waterspouts, thunderstorms, squalls, precipitation, and obscurations
Weather Advisory/WS/WSI/WA/CWA	In aviation forecast practice, an expression of hazardous weather conditions not predicted in the area forecast, as they affect the operation of air traffic and as prepared by the NWS.
Weather Conditions Aloft	Weather conditions aloft are: - Wind speed and direction - Temperature - Clear air turbulence - Thunderstorms -Thunderstorm associated turbulence - Hail - Icing - Mountain Wave Turbulence
Wind Information	Includes wind speed, wind direction, and wind gusts information
X	

Term	Definition
Y	
Z	

Appendix B: Action Verbs

Action Verb	Definition
Accept	To take or receive something offered
Access	Get some stored information
Acquire	Gain possession of, obtain.
Activate	To put into operation or effect.
Adjust	To change so as to match or fit; cause to correspond. To bring to a more useful state.
Alert	To notify someone of a condition that may require action.
Analyze	Examine methodically so as to determine the nature and components of a matter via categorization, calculation, itemization, comparison, or tabulation.
Approve	Respond favorably to a request.
Archive	To place something in long-term storage.
Assess	To examine a situation for the purposes of characterizing it or identifying specific events or conditions.
Assign	To give out as a task; allot. To set apart for a particular purpose; designate; select.
Assist	To give aid or support
Certify	To confirm formally as true, accurate, or genuine. To guarantee as meeting a standard.
Communicate	To give or receive information via voice or data.
Compare	To examine the character or qualities of two or more items in order to discover similarities, differences, or convergences.
Comply	To act in accordance with another's command, request, rule, or wish
Consider	To take something into account in the processing of some data or the making of a decision.
Configure	To design or adapt to form for some specific purpose
Control	To exercise authoritative or dominating influence over; direct. To adjust to a requirement; regulate. To hold in restraint; check. To verify or regulate.
Convert	To change (something) from one use, function, or purpose to another; adapt to a new or different purpose.
Coordinate	Bring into common action, movement, or condition. The exchange information and the participation in the planning of a common or joint action that requires consensus or cooperation.
Correlate	To put in relation with each other; to connect together by the disclosure of a mutual relation.
Detect	To discover or discern the existence of something, to become aware of something.
Determine	A process that uses information in order to establish some fact, happening, or event.
Display	To hold up to view or to present information to someone.

Disseminate	The act of providing information to one or more users without the information being tailored to specific recipients. {The difference between "distribute" and "disseminate" is that "disseminate" involves a process by which each recipient receives the same information, and "distribute" involves the tailoring of the information to the specific recipient.}
Ensure	To make sure or certain
Estimate	To calculate approximately based on previous values.
Establish	To bring into existence.
Evaluate	To examine and judge carefully; appraise. Assigning a status based on set criteria.
Exchange	To give and receive reciprocally; interchange. To give in return for something received; trade. To give up for a substitute. To turn in for replacement.
Filter	To extract a subset of information or data from a larger set based on specific criteria.
Format	To plan or arrange in a specified form
Generate	To bring into being; to create.
Have	To possess as a characteristic, quality, or function.
Identify	To recognize or establish as being a particular person or thing
Implement	To put into practical effect; carry out
Include	To take in as a part, element, or member.
Initiate	To set going by taking the first step; begin.
Issue	To promulgate an official statement such as an instruction, a command, or an advisory.
Maintain	To keep in an existing state; preserve or retain: keep in perfect or unaltered condition. This generally implies a further breakdown to store and update.
Manage	To direct or control the use of; handle
Measure	A processing action that quantifies something.
Modify	To change in form or character
Monitor	To keep track of systematically with a view to collecting information. To keep close watch over.
Notify	To give notice to; inform.
Perform	To take action in accordance with the requirements of; fulfill.
Predict	To make know in advance, especially on the basis of special knowledge.
Prevent	To keep from happening:
Process	To put through the steps of a prescribed procedure.
Project	To calculate, estimate, or predict, based on present data or trends.
Recommend	To advise or counsel
Record	To register information for preservation.
Reconfigure	To rearrange the elements or settings of
Report	To provide information in a prescribed manner.
Respond	Answer or reply in reaction to a message input.
Restrict	To confine within bounds.
Retain	To keep for possible future use or application

Retrieve	To get back; regain.
Secure	To put beyond hazard of losing or not receiving
Segregate	To separate or isolate from others or from a main group.
Separate	To set or keep apart. To space apart; scatter. To differentiate or discriminate between; distinguish.
Sequence	Serial arrangement in which things follow in logical order.
Store	To accumulate or put away for future use.
Summarize	To make a summary or make a summary of.
Terminate	To bring to an end or halt.
Transfer	To convey or cause to pass from one place, person, or thing to another.
Transmit	Send out a message, such as a call, acknowledgement, response, suggestion, direction, information, instruction, message, or request.
Update	Replace some information or data with information or data that is more current.
Use	To put into service or action; to employ.
Validate	To declare or make legally valid. Prove valid; show or confirm the validity of something.
Verify	To prove to be true or correct; to establish the truth of; to confirm; to substantiate.

Appendix C: Acronyms

Acronym	Meaning
A	
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
ATCSCC	Air Traffic Control Systems Command Center
ADIZ	Air Defense Identification Zone
C	
D	
DoD	Department of Defense
DT&E	Development Test and Evaluation
E	
ELT	Emergency Locator Transmitter
F	
FAA	Federal Aviation Administration
FAT	Factory Acceptance Test
FL	Flight Level
G	
GNSS	**Global Navigation Satellite System**
H	
HEMP	High-Altitude Electromagnetic Pulse
IFR	Instrument Flight Rules
ICAO	International Civil Aviation Organization
L	
M	
MHz	Megahertz
MSL	Mean Sea Level
MTBF	Mean Time Between Failure
MTTR	Mean Time to Restore
N	
NAS	National Airspace System
NAVAID	Navigational Aid
O	
OSHA	Occupational Safety and Health Administration
OT&E	Operational Test and Evaluation
P	
PAT&E	Production Acceptance Test and Evaluation
PIREP	Pilot Report
R	
RMA	Reliability, Maintainability, and Availability
RMS	Root Mean Squared

S	
SWAP	Severe Weather Avoidance Plan
T	
TM	Traffic Management
U	
UHF	Ultra High Frequency
US	United States
V	
VHF	Very High Frequency